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John Hunter—Pioneer of Veterinary Science*

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The fact that we of the veterinary branch of medicine owe as much to John Hunter as the members of the human branch, is not as well known as it should be, and when I was offered the honour of being allowed to deliver the Hunterian Oration I grasped the occasion with both hands, for I felt that this was not only a great honour for the veterinary profession, but exceedingly appropriate, as I happened, at the time, to hold an appointment in each of the two schools which claim John Hunter amongst their pioneer foundation builders. I refer to the Royal Veterinary College, of which he was one of the founders, and of which I was Principal and Dean for some ten years, and St. George's Hospital Medical School, in which he was one of the surgeons up to the time of his death, and in which I hold the Lectureship in Comparative Medicine.

Of Scottish parentage, and the youngest of a family of ten, we read that he hated books, but loved to study insects and animals in the state of nature, and it was no doubt this fondness for animals which lent zest to his consent in 1791 to be one of the founders of the London Veterinary College, of which he was stated in the *Veterinarian* for January, 1831, to be "the life and soul of the undertaking." His colleagues included Sir John Banks, and Sir George Baker, all three of them being Fellows of the Royal Society, and they joined hands with His Grace the Duke of Northumberland, and certain members of the Odiham Agricultural Society, to collect the necessary funds to build the first British Veterinary College, and to bring over to England Professor Charles Vial St. Bel, who was at that time a teacher in the Royal Veterinary School at Lyons; the latter being the first Veterinary College in the world to be established with State support. In an appeal which was issued to the public when the London College was first opened, the following words are attributed to John Hunter: "The treatment of the diseases of animals being taught scientifically, men of liberal education will cease to look on veterinary medicine as a mean and degrading profession. They will be convinced that this inferiority to human medicine consists, not in the arts themselves, but in the relative importance of their respective subjects, and that it deserved to be considered as a distinguished science occupying an eminent station in the scale of human knowledge."

As further testimony of his keenness to assist the project it is also stated in Joseph Adams' "Memories of John Hunter" that "as soon as the proposal was known to Mr. Hunter he eagerly joined in it, urging the advantages which might be derived from it not only for quadrupeds but to man—by extending our knowledge of physiology, and more particularly of pathology. In order to found the plan several gentlemen, the late Duke of Bedford at their head, deposited £500, on the chance of its ever being returned. Mr. Hunter was one of the number. It was proposed that he should examine St. Bel, to which he readily assented. It will easily be conceived by those who are at all acquainted with the continental pathology of those days that the examination proved unsatisfactory. John Hunter would have gladly introduced a gentleman with whom he was well acquainted and whom he knew to be docile, but he was over-ruled. Yet this did not lessen his zeal in promoting the object of the Institution; and as he could not instruct the Professor, he permitted all the pupils of the College to attend his own lectures without expense.

"The melancholy and unexpected event of St. Bel's death necessarily caused much anxiety with regard to the future of the College, and also as to the best means to be adopted to provide for the pressing requirements of the Institution. Some of the directors undertook the general management, and arranged for the professional duties to be

*Hunterian Oration, delivered by Sir Frederick Hobday, Honorary Fellow, at the meeting of the Hunterian Society held at the Mansion House, London, on February 28th, 1938. Reproduced, by permission, from the October issue of the Society's *Transactions*.

carried out by selected pupils, who, from the records, are said to have succeeded better than could have been expected, and to have given satisfaction to the subscribers. In this emergency John Hunter came nobly to the front and forthwith arranged for the students to attend the lectures of several of the leading teachers at the hospitals. The thanks of the directors for this important help were thus conveyed to him in the following letter by the Honorary Secretary of the College, dated September 18th, 1793:—

Sir,—I am directed to convey to you the thanks of the gentlemen present at the General Meeting held yesterday at the Crown and Anchor Tavern, Strand, for the particular manner in which you have interested yourself for the welfare and promotion of the Institution, by obtaining from Dr. George Fordyce, Dr. Baillie, and Mr. Home a free admission to their respective lectures, for such pupils of the College as may be recommended by this Committee.

I have the honour to be, etc.,
(Signed) W. Marshall.

"To this communication we are enabled to give Hunter's reply, having his original letter in our collection of professional papers. It is as follows:—

'Sir,—Not knowing that you intended publicly to thank the gentlemen for their readiness to assist the Veterinary College, I did not mention Mr. Cruikshanks—Dr. Baillie's partner in lectures; therefore, if should you advertise it again, I would have you mention him among the other gentlemen.

I am, Sir,
Your most obedient Servant,
John Hunter.'

"And in conclusion there is added a facsimile of John Hunter's autograph, paying him tribute, as follows:—

'We attach hereto a facsimile of Hunter's autograph, as doubtless many of our readers would wish to see a copy of the writing of one of England's most distinguished physiologists, whose labours have abided and will continue to abide as golden rules in the Sciences of Comparative Anatomy and Physiology.'"

Mr. Edward Coleman, a surgeon, was chosen for the principalship in 1793, and occupied the position until his death in 1839, writing several text-books and numerous theses—for one of which, on the "Eye," he was elected to the Fellowship of the Royal Society; and for another on "Suspended Animation" he received the medal of the Humane Society. The high opinion which he, in common with others, held of John Hunter, is illustrated by a paragraph taken out of a history of the College, written by Professor Beart Simonds, in which he said that "Mr. Coleman and Mr. Astley Cooper attended John Hunter's lectures, walking together up to Leicester Square every evening of their delivery, and relieving the tediousness of so long a walk, by discussing Mr. Hunter's opinions." Coleman, in a book which he published in 1798, when he was firmly in the saddle as Principal, gave still further evidence of his admiration for his former teacher, by a paragraph which reads: "I ought not to forget the debt which we owe to the memory of the late celebrated John Hunter, one of the first and best friends to the Institution."

With his friend Cline, Hunter served on the College Committee, being appointed one of the Vice-Presidents, and we read that "amongst the first operations performed by the newly appointed Principal St. Bel there was one for the removal of two redundant or accessory feet which grew from the fetlocks of the two fore-legs of a horse, and it is stated that Hunter personally assisted, and gave St. Bel 'some useful and friendly hints.' He operated on one leg at a time. In the first operation, which he performed with considerable anxiety, from the apprehension of the superfluous growth communicating with the fetlock joint, he was assisted by the renowned John Hunter, who, on seeing him remove the part without providing any flap or integument to cover the wound afterwards, advised him, the next time he operated, to make a provision of the sort. The consequence of which friendly and useful hint was, that the parts healed in half the time after the second operation than they did after the first."

That he had a genuine love for the horse is shown by the careful observation he has left behind him in his "Essays and Observations." His advice on certain phases of horse management and shoeing for certain defects is similar to that which is given at the present day. For example, he says in Volume I, page 57: "The breeders of horses ought to observe well and early the manner in which colts use their legs, especially their fore-legs. If a colt is inclined to point his toe down, so as to make him from that alone trip, he should be shod early, and the shoes made thick before and thin behind, to give him the habit to raise his toe; so that we find that women acquire a habit of lowering their toes by being shod high behind. If he is apt to turn his toes out he should be shod early, thick on the inside and thin on the outside in one foot, two, or all four feet, if necessary. When a horse is hot and let stand, he should have a cloth thrown over him, which prevents quick evaporation, by which means he does not so readily catch cold—more especially if he has been caught in the rain when warm—for water evaporates faster than sweat."

His observations on the sequel to paralysis of the left laryngeal nerve which gives rise to what is termed "roaring" in horses, are of particular interest to me personally, as it is a condition for the alleviation of which we have now a special plastic operation, of which I have done more than 4,000 cases. He says, "Some horses when pretty hard worked in any way, which always affects the breath, take to what is called 'roaring,' which is a sound in the chest near about where we may suppose the bronchia open into the trachea." In this, however, he was wrong, as "roaring" is definitely due to a paralysis of the left vocal cord.

He continues: "What the cause of this is I do not know. It does not seem to produce shortness of breath, nor what is called 'broken wind,' nor does it obstruct their actions; it is only disagreeable to the ear. But a very remarkable circumstance attends this complaint, which is, that a 'roarer' cannot be made to cough; the common modes cannot excite coughing. Therefore, when a horse cannot be made to cough, a complaint of this kind is to be suspected."

John Hunter wrote, too, "upon the effects that medicines have upon horses," and he relates how a friend of his, Mr. Hayes, a surgeon, gave a horse two drams of Dover's powders, and five grains of camphor when the poor beast had lockjaw; and another friend, Dr. Chadwick, unintentionally killed a horse in a few minutes by giving a pound of Epsom salts, stating that he could not in the least account for the death. This, I may interject, is a very heroic dose for a horse; and probably, too, as John Hunter surmises, some of the draught went down the wrong way, and caused asphyxia.

I cannot too much emphasise his close relationship with the founding of the London Veterinary College, as it was in this connection that his name came into the sick animal world, and it is a matter of congratulation to the veterinary profession of the present day that those who wished what was then known as the "art" of farriery to be put on a scientific basis, happened to meet with a man not only possessed of medical and surgical knowledge, but also full of forceful and tactful ability as to how it should be used. Men possessing these qualities are not easily found, but it is a strange provision of nature that they do seem to spring up to fill a gap when urgent necessity arises. Such a man was John Hunter. His contemporaries had had many evidences of his keenness for the study of comparative anatomy and the papers which were gathered together and subsequently published by his friend, Richard Owen, on Natural History, Anatomy and Physiology, give full evidence of this, including as they do most accurate and careful descriptions not only of animals varying in size from a mouse to an elephant, but also of birds, reptiles, insects, and fishes. One marvels, as one reads from these descriptions, that their author had time, not only to crowd in so much observation, but also to record them so accurately in so short a space of time as was included in the spare hours of a busy professional life. Such tenacity of purpose was truly a tribute to his characteristic personality. As an instance that nothing, even what others might consider trivial, escaped his powers of observation, one notes that he comments on the different methods of rising from the ground which are used respectively by the horse and the cow—the former always rising on the fore feet first, and the latter always getting up on the hindquarters before the front. The illustrations in his book entitled "Certain Parts of the Animal Economy," cannot be beaten for clearness and accuracy, even with the aids which are available at the present day, and those of us who have had experience of publishing books will realise the strain which must have been put upon the resources of the pocket of the author. In most of these published essays, wherever man is the subject discoursed upon there is some allusion or other to a comparison between the same condition as existing, or as might exist, in the animal; thus showing that this question of comparative medicine was always running through John Hunter's mind. His chapter on the glands situated between the rectum and the bladder, called "vesiculae seminales," has numerous pages which bring out in a most telling fashion the comparative anatomy and the uses of these glands not only in man, but in the various species of those which become patients of the veterinary surgeon, and the alterations which take place after being unsexed. In his Volume III he writes: "In all complicated animals, amongst which man is the most complex, the parts are composed of different structures, and we find that in such animals the powers of action of these different structures within themselves are very different; when they are therefore excited to common action, the varieties produced should be well known and particularly attended to."

I was especially interested in reading his experiments on the body temperatures, as this subject in animals is one to which I have devoted a good deal of attention with the advantages, which John Hunter cannot have possessed, of modern thermometry; and his notes in the chapter "Experiments and Observations on Animals with respect to the power of producing heat" are authoritative even at the present day. His experiment in which he froze the serrated edges (some half-an-inch long) of the comb of a well-grown young cockerel until they were white and hard, and in which he observes "when I cut off a

little bit it did not bleed nor did the animal show any signs of pain," was pioneer work in the use of freezing mixtures as an anaesthetic. Again, his writings on digestion bear witness to his keen power of observation and contain much which is food for thought even at the present day; his conclusions being in regard to the principles of digestion " that it is neither a mechanical power, nor contractions of the stomach, nor heat, but something secreted in the coat of the stomach and thrown into the cavity and which there animalises the food or assimilates it to the nature of the blood. The power in this juice is confined or limited to certain substances especially of the vegetable or animal kingdom, and although this menstrome is capable of acting independently of the stomach yet it is indebted to that viscus for its continuance."

In these observations he had realised that each individual type of animal had certain foods which were suited for its own particular type of digestive organs, and his work as a comparative anatomist had caused him to endeavour to reason out the physiological processes which take place during digestion and to endeavour to reconcile them with the anatomical arrangement of the internal digestive organs. For example, he says: " There are few animals that do not eat animal food in some form or another, whilst there are many who do not eat vegetables at all, and therefore the difficulty to make the herbivorous to eat meat is not so great as to make the carnivorous to eat vegetables; and where there is an instinctive principle in an animal directing it either to the one species of food or the other, the animal will certainly die rather than break through that natural law; but may be made to violate every natural principle by artificial means."

He also had learnt that it was not possible to make a horse vomit; and that it was not wise to surmise that because certain agents acted in a certain manner upon one species of animal they of necessity would act in the same manner upon other species of animal or upon man.

The interest in this paragraph lies in the fact that such knowledge can only have been acquired by direct observation; and, as instances to illustrate this, it is worth while here for me to interpose one or two which bear upon the idiosyncrasies which make it wise for those who record observations upon animals to have a certain grounding in the work of the veterinary surgeon, whose syllabus of teaching during the time in which he is endeavouring to obtain the diploma of membership of the Royal College of Veterinary Surgeons includes courses of lectures which enable him to avoid pitfalls into which he might otherwise tumble. As an instance, let us take the common drug, whose name is familiar to everybody, morphia. Morphia in man is a drug which is not only used to ease pain, but to cause drowsiness and the deep sleep of narcosis, and amongst the patients of the veterinary surgeon this result is brought about in animals of the dog tribe, but in the horse and cat it has a directly opposite effect and produces a most disastrous delirium. Take strychnine as another example. We dare not administer this alkaloid in anything like the same proportion, pound for pound body weight, in the cow or the dog that we do for the horse—and compounds of mercury are somewhat similar. The skin of all animals, too, is extremely sensitive to the external application of any medicament containing turpentine, whilst in the use of carbolic and other disinfectants containing carbolic or chrysylic acids, experience has taught us that, although they are valuable in certain forms of skin disease, they have to be used with extreme care. The ox is practically immune to glanders, the disease which is fatal to animals of the horse tribe and to man; and I could give you many more instances where idiosyncrasies play a large part.

In the surgical world, too, we know of the classical experiment of John Hunter's whereby he grafted, with success, a cock's spur to its comb. This was definite pioneer work of the various grafting operations which are performed to-day. It was his own accident, in which he ruptured his tendo Achilles in 1767 which led him to make a series of observations on the reunion of divided tendon—the beneficial outcome of which has done so much to save the lives of animal patients as well as human, for the horse or dog to whom the accident has happened is now no longer destroyed, but submitted to operation and curative treatment with success in a very high proportion of cases. When one looks at the text-books which have John Hunter's name attached to them one cannot but marvel at the skill and perseverance of the man. His drawings on the development of the chick embryo and other specimens, for the details of which—although he was not the actual delineator—he was responsible, are testimonials to his many-sided knowledge. In the library of the Royal College of Surgeons there is an old manuscript volume of John Hunter's lectures, taken down in 1833 by his friend, William Cliff, in which he gives " Descriptions of some Animals," contrasting the fox with the dog and giving a most accurate drawing of the malplaced generative organs of a ram; whilst the inferences he draws from the anatomical arrangement and function of the stomachs of the cow show that he must have made many *post-mortem* examinations. In fact, he never appeared to miss an opportunity of a *post-mortem* on any animal, for his

observations extend to widely spread species, from a lion to a hedgehog. There is no doubt that his love of anatomy, and the advantages which he saw in it as an aid to surgical pathology, stimulated his wish to see veterinary science established on a sound and scientific footing in England—for no man makes better or more practical use of his anatomical knowledge in this direction than the practising veterinary surgeon.

Take, as an instance, the fracture of a limb in a veterinary patient. In one class of patient its life is at stake, in another it is merely a matter of time or expediency as to whether this shall be aided to repair or not.

If a horse or a cow breaks its leg—although, except in very severe cases, there is rarely trouble in getting the bones to unite, it is always an economic problem and has to be considered in terms of £ s. d.; for if the cost of keep during repair is more than the animal is marketably worth, or if it cannot be restored to definite usefulness without continuing permanently lamed, it is common sense for the owner to cut the loss at the start, and let the animal be humanely destroyed, and recover the carcase value. If a dog or a cat, or even a monkey or bird, or some other pet, breaks its limb, it is rare for one not to be able to set the limb with a satisfactory result; and the dog in particular looks after a wounded limb so well that he may be considered one of the best of patients.

For the veterinary surgeon there is one paragraph which Hunter wrote which particularly applies to the general practitioner. He states: "The man who judges from general principles only shows ignorance; few things are so simple as to come wholly within a general principle. We should never reason on general principles only, much less practise on them when we are or can be master of all the facts; but when we have nothing else but the general principle, then we must take it for our guide." I have given you these little quotations from John Hunter's book to show the interest he took in animals from the practical and economic side, as well as from the anatomical aspect. To him an animal was something to study, and from which he could reason, and there is no doubt that this underlying spirit was one which led to the whole-hearted support which he gave in those pioneer days of 150 years ago—incidentally through the Veterinary College—to veterinary science. This was alluded to even as recently as November 9th last when their Gracious Majesties performed the opening ceremony of the new £250,000 Hospital and Laboratory Building.

Veterinary science has at last "come into its own." It does not need any longer to call itself the Cinderella of the sciences, for its value to the welfare and prosperity of a country is as great as that of any other profession or industry.

Animals are essential to every country, and whether one thinks in terms of those who keep pets, or the stock owner who breeds the animals we need for the food we eat and the milk we drink—each is an essential of life. Go where you will and look at it as you please—one cannot get away from the fact that a nation to be prosperous must look after its animals.

Agriculture is the backbone of a country, and the two chief vertebral bones are its animals and its arable products. The wealth and well-being of the owner of the animals—whether breeder or seller—depends on the health of the animals; and the health of those animals must depend on the progress of veterinary science. A few days ago I was shown a copy of the first diploma issued in 1794, in which it was certified that a certain Mr. Edward Bond had attended the Veterinary College as a resident pupil for 18 months, and, after having been examined, was considered "Qualified to practise the Veterinary Art"; it made me think of the great changes which had taken place since that time. The entrance examination must now be of a university standard, the period of study has been lengthened to a minimum of five years for the diploma, with a break into a sixth year if the aspirant wishes to take a university degree; and there is the greatest difficulty in obtaining a student nomination, as although there are five teaching colleges, each one is full to overflowing, all built up from the small beginning of which it has repeatedly been stated that John Hunter was "the life and soul of the undertaking." By way of conclusion I propose to put on the screen a few slides and photographs which will illustrate that the foundation with which John Hunter was so intimately connected was indeed "well and truly laid," as not only has there been raised upon this one of the most modern, up-to-date, and well equipped veterinary schools in the world, but indirectly through the initial influence of the Royal Veterinary College, the Mother of all English-speaking colleges of the Empire, his name can without fear of contradiction be proclaimed as one who was an early link between the human and animal branches of the very important section of comparative medicine.

This link—that of comparative medicine—is of the utmost importance in the fight against disease—for it is here that the doctors and the veterinary surgeons meet on common ground. It is the testing-out ground for theories and the field for discussions—not only on the diseases communicable between animals and man, such as mange, rabies, tuberculosis, anthrax, foot-and-mouth disease, etc., but also

those which are not able to be transmitted from one species to another (such as glanders, against which, as I have already alluded, the ox is immune); those which are analogous (such as cancer and the various tumours) and such everyday ailments as influenza, common catarrh, rheumatism, fibrositis, indigestion, the pneumonias, and a host of other common maladies; and on many problems in which the modern veterinary scientist can very materially help his human confrère from side-tracking unnecessarily when making his preliminary researches before applying the results to the prevention of ailments which affect his own particular patients —man.

In connection with this systemised study of the comparative aspect you will be pleased to hear that when I was in India last month at the Silver Jubilee Congress of the Indian Association of Science, the subject of comparative medicine was added to the list of scientific sections, and will, I am sure, be a real live body at future gatherings.

It will be organised on similar lines to the Comparative Medicine Section of our own Royal Society of Medicine, which has done so much to bring together in England the mutual admirers of the central figure of our gathering to-night—John Hunter.

. . . . .

[Mr. Mortimer Woolf, in proposing a vote of thanks to Sir Frederick Hobday for his Oration, said his mind was carried back to a time some ten years ago when the Society thought it would be a good plan to identify itself in some small way with the sister profession of veterinary science. According to the rules, no one could be elected a member of the Society unless he was a registered medical practitioner, but anyone distinguished in the realm of science or scientific work could be elected as an Honorary Fellow, and with one accord and with acclamation the Council recommended to a general meeting of the Fellows that Sir Frederick Hobday should be elected one of the very first Honorary Fellows. Evidence had been given that evening of the wisdom of the Council's action, and, speaking as one who was a member of the Council at the time (he was not sure that the election did not take place during his Presidency), he thought that the present was an epoch-making night. It was the first time, he believed, that the Society had ever had a lecture of the kind which Sir Frederick had given, which had so admirably linked together medicine and surgery and veterinary science and identified them with their common origin, the great man whose name the Society bore. Speaking for himself and, he was sure, for everyone present that evening, he thought they owed a very great debt to Sir Frederick Hobday for having gathered the various parts together into one great composite whole, because, after all, whatever aim they were striving for and whatever branch of science they were practising, whether it were medicine or surgery or veterinary work or even psychology, they were all trying to advance scientific knowledge to some extent. He did not think he had realised until he had heard Sir Frederick's Oration that evening how much the members of the medical profession owed to their veterinary brethren. It was not so much a question of the beautiful operations which Sir Frederick had shown or the diseases with which he had dealt; it was a question of scientific advancement for the good of mankind. He rejoiced that the Hunterian Society had had the foresight to see that and not to adopt what he believed was popularly known to-day as an isolationist policy, but to embrace the whole of the work, whether it were homeopathic, allopathic or veterinarian.]

VITAMIN B_1: NEW INTERNATIONAL STANDARD

It is announced that the first international standard for vitamin B_1, which consisted of an adsorbate of the antineuritic vitamin, made from rice polishings, on fuller's earth, has now been replaced by a preparation of crystalline vitamin B_1 hydrochloride. In recent years progress in the study of the antineuritic vitamin has been rapid, and this change in the form of the international standard has been made possible by the synthetic preparation of the vitamin in pure crystalline form.

Through the generosity of four manufacturers, an adequate quantity of the new crystalline material was placed at the disposal of the National Institute for Medical Research, Hampstead, to enable a new standard to be prepared consisting of the pure crystalline substance. Extensive international investigations of the properties of this material, and in particular the determination of its potency in terms of the original international standard by a variety of methods, have now been completed, and the members of the International Conference on Vitamin Standardisation have unanimously recommended that the sample be adopted as the Second International Standard for Vitamin B_1, and that the international unit be defined as the antineuritic activity of three microgrammes of the international standard preparation. This recommendation has been adopted by the Permanent Commission on Biological Standardisation of the Health Organisation of the League of Nations.

As in the case of the other international vitamin standards, the new standard for vitamin B_1 is held on behalf of the Health Organisation of the League of Nations, at the National Institute for Medical Research, Hampstead, N.W.3, and is distributed therefrom to national control centres established in other countries for local distribution to laboratories, institutes and research workers; and to workers resident in countries in which the establishment of national control centres has not yet been completed.

With regard to the supply of the new standard for vitamin B_1 to those requiring it in the United Kingdom, samples have already been sent to the laboratories, institutes and research workers who have hitherto received the standard adsorption product. Others requiring the standard are asked to make application to the Department of Biological Standards, the National Institute for Medical Research, Hampstead, N.W.3.—*Pharmaceutical Journal.*

Experiments on the Effect of Vitamin A Deficiency on the Resistance of Pigs to Tuberculous Infection from Naturally Infected Milk

S. K. KON and C. MADDOCK,

National Institute for Research in Dairying, University of Reading

Following the work carried out at this Institute on the virulence and viability of the tubercle bacillus in natural media (Maddock, 1933, 1934, 1936) and on vitamin A deficiency in pigs (Golding and Foot, 1935; Golding, Kon and Campion, 1936; Foot, Golding and Kon, 1938) it was of interest to find out whether under natural conditions deficient pigs would be more susceptible to infection with naturally infected tuberculous milk than pigs similarly fed but receiving an abundance of vitamin A.

It is not possible to discuss here the very voluminous literature bearing on the relation of nutrition to resistance to infection and disease. The recent review of Clausen (1934) contains much information on the effect of diet on experimental tuberculosis, while Fraser (1935) has dealt with the rôle of nutrition in prevention of disease in farm animals. Little is known about the bearing of dietary factors on tuberculous infection in pigs and in this respect the old experiments of Weigert (1907) are of interest. This author found that suckling pigs receiving cream mixtures were more resistant to experimental tuberculosis than those fed on skim milk.

In the present experiment an endeavour was made to expose young pigs to tuberculous infection under natural conditions. It was thought that this might be best accomplished by allowing them access to naturally infected cow's milk containing numbers of tubercle bacilli such as might well be encountered on the farm.

Details of the Experiment

After much searching and examination of a large number of cows a suitable animal was finally obtained through the kindness of the Berkshire County Veterinary Officer on April 1st, 1937. The cow had calved at the end of January, 1937, and was in excellent condition and giving from three to four gallons of milk daily, but had a small tuberculous lesion in the right hind-quarter of the udder.

For the purpose of the experiment one Large White sow was transferred from the usual stock ration to the vitamin A-deficient ration two-and-a-half weeks before farrowing. The deficient ration had the following composition:—

Barley meal	50
Wheatings	35
Extracted soya bean meal	8
Meat meal	5
Salt	0·5
Ground lime-stone	1·5

It has been shown by us (Golding and Foot, 1935; Golding, Kon and Campion, 1936; Golding and Kon, 1938), that while such diet produces, when fed alone, definite symptoms of vitamin A deficiency, it gives, when supplemented with vitamin A, normal growth in pigs.

After the birth of the litter, mother and young were continued on the deficient ration. The litter was weaned at eight weeks and a week later was divided in two groups as follows:—

Pigs on deficient ration.		Pigs receiving vitamin A.	
No.	Weight, lb.	No.	Weight, lb.
411	46	414	44
413	38½	415	38½
417	29	416	30
419	37½	418	39
412	34		

The dosing of the positive group was started on the following day, each pig receiving directly by mouth 5 ml. of a potent vitamin A concentrate containing 600,000 Moore blue units (Moore, 1930) of vitamin A. As one Moore blue unit is approximately equal to 0·6 International unit (Moore, private communication) the dose contained about 360,000 i.u. A gag and a syringe were used for the administration of the concentrate. The dosing was continued at fortnightly intervals throughout the experiment.

On the day the dosing was started, pig 412 was slaughtered and its liver reserve of vitamin A was measured by the method of Davies (1933). It was found that the whole liver contained 2,320 Moore blue units (1392 i.u.) thus showing that at the time the reserves of the negative pigs were getting low.

Both groups were kept separately and the vitamin A-deficient ration was fed, mixed with water, twice daily. Of this mixture 1¾ lbs. was given to each pig at each feed and this was gradually increased to 3 lbs. by July 24th, 1937.

On April 6th, 1937, the two groups of pigs were put into new brick sties which were completely separated. (The sties were situated in the midst of arable land and were not on the Institute premises.) The group receiving vitamin A was in excellent condition, whilst the other group was showing early signs of vitamin A deficiency, *viz.*, the pigs had staring coat,

were lethargic and the weights of this group were less even than those of the positive group.

The weights of the pigs in each group on April 6th, 1937, were as follows:—

		lb.
Group 1.		
Receiving vitamin A concentrate	No. 414	106
	„ 415	92
	„ 416	81
	„ 418	93
Group 2.		
Receiving no vitamin A ...	„ 411	108
	„ 413	95
	„ 417	63
	„ 419	74

It was not considered necessary to tuberculin-test the pigs at the outset of the experiment. They were almost certainly free from this disease. Pig 412 and one other of the same litter which died on January 11th, 1937, showed no trace of tuberculosis at *post-mortem* nor has there ever been any tuberculosis in the Institute's piggeries.

Preparation of the Milk and Determination of its Tuberculous Content

Milk from the right hind-quarter of the tuberculous cow was brought to the laboratory daily and prepared for administration to the pigs on the following day. As milk fat contains large quantities of vitamin A, the milk had to be separated. For this purpose 400 ml. of the milk were centrifuged in eight tubes of 50 ml. capacity at 3,000 r.p.m. for 30 minutes. The resulting separated milk contained only 0·08 per cent. of fat. A microscope slide was prepared and examined daily from the deposit of each of two tubes selected at random and the number of tubercle bacilli present recorded. The deposits in all tubes were stirred with the separated milk, the mixture was put through a sterile cream emulsifier to distribute the tubercle bacilli and was then collected in a sterile bottle. This was kept in the refrigerator until the following morning, when 200 ml. were mixed with the morning feed and the remaining 200 ml. with the evening feed of the pigs.

The addition of the separated milk to the feeds was begun on April 8th, 1937, and continued to August 11th, 1937.

The milk was tested biologically for tubercle bacilli three times in the course of the experiment.

On April 2nd, 1937, samples of milk drawn separately from the four quarters of the cow were inoculated into four pairs of guinea-pigs. On May 26th, 1937, the guinea-pigs were killed. The guinea-pigs inoculated from the right hind-quarter showed advanced generalised tuberculosis, whilst those inoculated from the other three quarters were perfectly healthy.

On June 1st, 1937, the deposit from 50 ml. of milk from the right hind-quarter was diluted with 1 ml. physiological saline and 1 ml. was then diluted to 0·001, 0·0001 and 0·00001, and 1 ml. of each dilution inoculated into the groins of a guinea-pig.

On July 10th, 1937, the guinea-pig that had received 0·00001 ml. died of pneumonia but no trace of tuberculosis could be found. Those that had received 0·001 and 0·0001 ml. respectively died of advanced generalised tuberculosis on August 24th and September 19th, 1937. This gives some idea of the weight of infection.

On August 12th, 1937, the separated milk as given to the pigs on August 11th, 1937, was inoculated into pairs of guinea-pigs. The dilutions and results are given in Table I.

Table I

Amount of Separated Milk injected.	Date of Death (D) or Killing (K).	Result.
1·0 ml.	D. 1.10.37	Advanced generalised tuberculosis
	K. 25.10.37	„
0·1 ml.	D. 22.9.37	„
	K. 25.10.37	„
0·01 ml.	K. 28.10.37	„
	K. 28.10.37	„
0·001 ml.	K. 28.10.37	„
	K. 28.10.37	„

The cow remained in excellent condition throughout the experiment and gave an average of 32·3 lbs. of milk daily up to June 25th when she went into oestrus and her milk yield fell to an average of 2·5 lbs. daily until August 16th, 1937, when she was slaughtered.

Daily examinations of the milk for numbers of tubercle bacilli were carried out to be sure that the infection was always within reasonable limits.

Tuberculin Tests on Pigs and Post-Mortem Examination of Pigs and Cow

The pigs were intradermally tuberculin-tested at the base of the right ear by Captain W. L. Little, F.R.C.V.S., on August 10th, 1937, and the results are given in Table II. (*over-leaf*).

All the pigs showed a very marked reaction, so much so that the second intradermal dose could not be given. The necrosed area showed as a superficial dry black slough.

At the time of injection the pigs receiving no vitamin A were showing definite signs of weakness in their hindquarters, moved with difficulty and their general condition was below that of the pigs given the vitamin A concentrate.

TABLE II

MEASUREMENT CHART

Description.	Number.	At 1st injection.	At 48th hour.	At 72nd hour.	Character of swelling.	Result.
Diet + vitamin A Concentrate	Pig 414	2	13	12	Very marked oedema	Reactor
	,, 415	3	9	9	Necrosis	,,
	,, 416	3	8	11	,,	,,
	,, 418	3	5	11	,,	,,
No vitamin A	,, 411	3	7	16	Very marked oedema	,,
	,, 413	3	8	12	Necrosis	,,
	,, 417	3	11	14	,,	,,
	,, 419	2	7	8	,,	,,

On August 13th, 1937, Pig 413 of the vitamin A-deficient group died and a *post-mortem* examination was made on the 14th. The carcase appeared to be in good condition, approximate weight 180 lbs., and the only *post-mortem* change visible externally was a green discoloration in the left groin.

The *post-mortem* findings were as follows:—

Abdomen.—Distended, small intestine empty, haemorrhages in the walls, no ulceration. Mesenteric and pelvic glands enlarged and hard. The liver weighed 2 lbs. and small rough patches were present on the peritoneal surface.

Thorax.—Heart normal, no pericarditis. Lungs both pneumonic and adherent to thoracic wall. Mediastinal glands not enlarged.

Submaxillary and tracheal glands enlarged and hard, right submaxillary showed small patch of caseation.

On August 16th, 1937, the rest of the pigs and the cow giving the tuberculous milk were slaughtered.

Table III gives the findings in the case of the pigs.

The result of the *post-mortem* of the cow is given below.

Cow.—In the *udder* the right hindquarter was large and hard but on section no caseation or signs of breaking down were detectable. The remaining quarters appeared normal on section. The *supra-mammary glands* were enlarged and caseous. The *liver* had tuberculous patches. The *lungs* were healthy but the base of the pleura was studded with tubercles. The mediastinal glands were enlarged and caseous; the sub-diaphragmatic and mesenteric glands enlarged but not caseous.

TABLE III

Fig.	Live Weight, lb.	Liver Weight, lb.	Glands.				Remarks.
			Sub-maxillary.	Tracheal.	Mesenteric.	Pelvic.	
			(*a*) PIGS FED ON VITAMIN A-DEFICIENT DIET + VITAMIN A CONCENTRATE. GROUP 1				
414	231	4	+	—	+	+	Slight peritonitis with fibrous shreds on liver. No definite caseation in glands.
415	191	4	+	+	+	+	Lungs adherent to thoracic wall and pericarditis. Caseous patch in one sub-maxillary.
416	182	3 lb. 14 oz.	+	+	+	+	Submaxillaries caseous patches.
418	168	3	+	—	+	+	Glands larger than those above but no caseation.
Average	193						
			(*b*) PIGS FED ON VITAMIN A-DEFICIENT DIET. GROUP 2				
411	206	3	+	—	+	+	Lumbo-sacral gland caseous patch.
413	180?	2	+	+	+	+	Right sub-maxillary gland caseous patch.
417	150	3	+	+	+	+	A mesenteric and lumbo-sacral gland caseous patch.
419	139	2¼	+	—	+	+	No caseation.
Average	169						

+ = Enlarged. — = Not enlarged.

Examination of Glands removed from Pigs.—From each pig one or more submaxillary, tracheal and mesenteric glands were removed and placed in sterile bottles. After taking sections for microscopic examination, portions of the glands were finely minced and then ground in a mortar with Ringer's solution. The mush was then strained through a layer of muslin. The resulting suspension was then mixed with an equal quantity of Ringer's solution and 1 ml. inoculated into a pair of guinea-pigs, on August 17th and 18th, 1937.

The two guinea-pigs that were inoculated with glandular emulsion from Pig 413 on August 17th, 1937, died of sepsis on August 19th, 1937. The remainder of the emulsion was then treated with chlorine (Maddock, 1933) and another pair of guinea-pigs inoculated. These animals survived without any local trouble. All the guinea-pigs, with the exception of two which died from intercurrent infections and those inoculated from Pig 418, developed tuberculosis (see Table IV).

as the others during the experiment, although it had started the second heaviest in its group. No caseous patch could be found in any of the enlarged glands examined, and the most likely inference that can be made is that the portions of glands injected into the guinea-pigs did not happen to contain the tubercle bacillus and the infection had not advanced as far as in the other pigs. Cultures of tubercle bacilli were made from the tuberculous lesions in the guinea-pigs and from the cow's milk and the reactions proved that they were of the true bovine type. There does not seem to have been any material difference in the susceptibility of the two groups of pigs to tuberculous infection.

Vitamin A estimations were carried out on the livers of the two groups of pigs with the results shown in Table V (*over-leaf*).

It will be seen that in every case the vitamin A stores of the pigs on the deficient diet were completely exhausted. Their weight was also lower than that of the pigs receiving the concentrate and they were showing symptoms of vitamin A deficiency.

TABLE IV

Guinea-pigs inoculated from glands of pig.	Date of inoculation.	Date of death = D. Date killed = K.	Remarks.
(*a*) PIGS FED ON VITAMIN A-DEFICIENT DIET + VITAMIN A CONCENTRATE. GROUP 1			
414	17.8.37	28.10.37 K. 29.10.37 K.	Very advanced generalised tuberculosis. Generalised tuberculosis.
415	17.8.37	28.10.37 K. 29.10.37 K.	Generalised tuberculosis. Very advanced generalised tuberculosis.
416	18.8.37	21.10.37 D. 25.10.37 K.	Both very advanced generalised tuberculosis.
418	18.8.37	3.11.37 K. 3.11.37 K.	No trace of tuberculosis in either.
(*b*) PIGS FED ON VITAMIN A-DEFICIENT DIET. GROUP 2			
411	17.8.37	23. 8.37 D. 29.10.37 K.	Pneumonia. Advanced generalised tuberculosis.
413	19.8.37	28.10.37 K. 29.10.37 K.	Both very advanced generalised tuberculosis.
417	18.8.37	15. 9.37 D. 28.10.37 K.	Pneumonia. Very advanced generalised tuberculosis.
419	18.8.37	25.10.37 K. 25.10.37 K.	Both advanced generalised tuberculosis.

The first guinea-pig to succumb to tuberculosis was one inoculated from a pig fed with vitamin A concentrate. No explanation can be offered for the non-recovery of the tubercle bacillus from Pig 418. This pig had markedly reacted to the tuberculin test and at *post-mortem* no difference from the other pigs was noted. This pig had not put on as much weight

This experiment has, therefore, failed to show any increase of resistance to infection or even abatement of the severity of its incidence following the administration of large doses of vitamin A to pigs in comparison with similar animals showing signs of deficiency on a ration devoid of vitamin A.

Table V
Vitamin A reserves of Pigs

Pig.	Weight of liver.	Vitamin A per g. of liver.	Vitamin A in whole liver.
		International units.*	
	Pigs receiving Vitamin A Concentrate		
414	4 lb.	240	432,000
415	4 lb.	216	388,800
416	3 lb. 14 oz.	300	523,200
418	3 lb.	240	324,000
	Pigs on Deficient Diet		
411	3 lb.	0	0
413	2 lb.	0	0
417	3 lb.	0	0
419	2¼ lb.	0	0

* Measured in Moore (1930) blue units by the method of Davies (1933) and then converted to International units as described on p. 1693.

Summary

A litter of pigs was divided into two groups of four pigs each. One group was kept on a diet devoid of vitamin A, the other received in addition a vitamin A concentrate supplying 25,000 International units of vitamin A per pig daily. Milk from a cow with a tuberculous lesion in one quarter of her udder was centrifuged and the fat was discarded. The sediment was then remixed with the separated milk and the mixture was fed in comparatively small amounts to both groups of pigs, in such a way that the feeding of the mixed milk of a herd containing one cow with a tuberculous udder was simulated. In four-and-a-half months all the pigs became infected to an equal extent.

This experiment has failed to reveal any protection against tuberculous infection when large doses of vitamin A were administered to pigs. Although the size of dose of tubercle bacilli was such as might be found on an ordinary farm, it is clear that in such a susceptible animal as the pig, the administration of vitamin A even in large doses does not convey any increase of resistance measurable by the technique used.

Acknowledgment.—We are indebted to Messrs. Lever Brothers, Ltd., for the gift of the vitamin A concentrate.

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CLINICAL COMMUNICATION

The Administration of Iron to Sucking Pigs

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and
G. E. JOSS*

Agricultural colleges and institutes recommend several methods of administering iron salts to piglets to prevent anaemia.

We should like to record our experiences of two of these methods: (1) by painting a mixture of iron, treacle and water on the sow's udder—the idea being that the piglets will suck this off when feeding; (2) by individual dosing.

In the first method the solution was made up according to the recommended prescription (3½ oz. iron sulphate, ½ oz. copper sulphate, water and treacle, one pint of each), and painted on to the udder of the sow. The next day the whole of the udder was coated with faeces, litter, dust, etc., due to the adhesive nature of the mixture. It was quite impossible for the young pigs to suck, and if they had done so they would have been compelled to take in a quantity of dirty foreign matter. It took the farmer a considerable time to cleanse the udder, using a scrubbing brush, soap and water. In the removal of this some irritation of the udder resulted and lactation was markedly reduced. This particular sow failed to rear any of the young pigs in her litter, though possibly the existing anaemia was partly responsible. We are sure that unless sties are kept perfectly clean, which is not always possible, this type of result is inevitable.

It would be interesting to learn whether other practitioners have used this method, and if so, what their experiences were.

The second method seems economically unsound. Owners usually have not time to catch and dose each piglet individually every day or even every second day. Further, the disturbance to the sow and the risk of injury to the piglets are practical disadvantages sufficiently serious to make the method unsatisfactory.

There seems to be a possible solution to this problem, by giving a single dose of iron-pyrophosphate as reported in the *Journal of the Ministry of Agriculture*, August, 1938.

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It was reported at a meeting of the Kent County Council at Maidstone, that during the four months ended September 30th, 142 animals were slaughtered under the provisions of the Tuberculosis Order, 1938, in Kent, and compensation paid to owners.

ABSTRACTS

[Age as a Factor in Susceptibility to Johne's Disease. Hagan, W. A. *Cornell Vet.* **28.** 1. 34-40.]

Cattle affected clinically with Johne's disease were introduced into an experimental herd of cattle which were maintained as far as possible in conditions comparable to those on farms. The calves ran freely with the adult stock.

Out of 23 calves born in the herd, seven died of Johne's disease at an average age of 32 months, six showed lesions and ten no evidence of disease at an average age of 24 months. Out of six calves introduced under a year old one died after being in herd 37 months and the others showed no evidence of Johne's disease on *post-mortem* examination after being in the herd an average of 25 months. Six other cattle added when above a year old, on slaughter showed no evidence of Johne's disease after an average period of 24 months in the herd.

In addition to this natural infection nine others were artificially infected under one year old and of these seven died or showed lesions on *post-mortem* examination. A group of three exposed similarly between one and two years old all died, and of three over two years old none appeared to become affected.

One case of recovery is cited. A cow developed severe symptoms of Johne's disease, having been infected artificially when a calf. She appeared to recover and remained free of symptoms for five years. On *post-mortem* examination a small diseased area was found in the caecum, but at the height of the disease it would appear that much of the intestines was affected, for scrapings from the rectal wall showed masses of organisms in the diseased tissue.

G. J. G. H.

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[Scopolamine Action on the Horse. Craige, A. H. (1938.) *J. Amer. Vet. Med. Assoc.* **93.** 1. 28-31. (4 refs.).]

The article is based on a series of experiments on eight horses, conducted to ascertain the action of the alkaloid on the higher cerebral centre. At the same time detailed observations were made of the action on the heart, salivation, peristalsis and the pupil. The drug was used in the form of the hydrobromide (hyoscine hydrobromide) administered in all instances, except one, by the subcutaneous route.

Excitement was noted in all cases where a dose of over 8 mg. (1/10 grain) was given, while with smaller amounts there was no obvious action on the higher centres.

The following table reproduced from the original gives a summary of the other important findings regarding dosage and effects.

Dose.		Action Desired.
Milligrams	*Grain*	
0·5–1·0	1/120–1/60	Sedative to the intestine.
1·0–1·5	1/60–1/45	Anti-sialogogue and suppression of mucous secretion (respiratory astringent).
1·5–2·0	1/45–1/30	Mydriatic.
2·0–3·0	1/30–1/20	Accelerate heart; free it from vagal inhibition.
6·0–8·0	1/10–1/8	Stimulate the central nervous system.

J. W. H. H.

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["Joint Mice" in the Horse. Ruthardt. (1938.) *Zschr. Veterinärk.* **50.** 7. 325-332.]

Portions of cartilage, often containing bone in their interior, are found in joints in man and in the horse. They are most commonly associated with arthritis deformans. They vary in size from that of a rice grain to that of a hen's egg and either are completely free or are attached to the synovial membrane. Multiple soft bodies composed of fibrin or necrotic portions of tissue are included by some authors under the term "joint mice." In the horse most cases have been found accidentally at autopsy, diagnosis during life being extremely difficult.

A four-year-old gelding developed a severe gonitis as a result of trauma and was later discharged sound. Nine months after the accident, however, sudden lameness recurred in the stifle originally affected. Radiographs showed a bean-sized shadow within the joint, diagnosed as a "joint mouse." A month later lameness still persisted and the prognosis was considered poor, the position of the shadow having altered during the interval. Using chloral hydrate narcosis, an attempt was made under strict asepsis to remove the "joint mouse," but in spite of passive movements of the limb it could not be found. The wound healed by primary intention, but the general condition of the animal was very poor and it was later slaughtered. Within the joint was a bean-sized mass of bone which had been split from the medial eminence of the intercondyloid tubercle: it was united by granulation tissue to the anterior ligament of the meniscus.

E. G. W.

[Embolism of the Intestine Diagnosed by Rectal Examination. Berenz. (1938.) *Zschr. Veterinärk.* **50.** 8. 378-381.]

The author was able, 24 hours after the commencement of an attack of colic in a nine-year-old horse, to palpate by rectal examination a thickening of the dorsal colic artery, about 15 cm. in length. There was no pulsation in the thrombosed vessel. Palpation of the portion of large colon supplied by the thrombosed vessel caused great pain. The animal died 24 hours later.

At autopsy, there was an early peritonitis. The thrombosed vessel was filled with brittle, dark red thrombus and the infarcted portion of colon was distended with gas and contained a dark reddish-brown fluid. The wall was 1·5 to 2·5 cm. thick and infiltrated with a haemorrhagic gelatinous exudate. The cranial mesenteric artery was the seat of an aneurysm the size of a "child's fist," containing laminated thrombus and 13 strongyles. The liver, heart and kidney showed cloudy swelling.

Although in some cases a parasitic aneurysm may be palpated by rectal examination, it must be a very rare occurrence to be able to diagnose embolism of a mesenteric artery during life.

E. G. W.

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[Clinical Experiences with Prontosil in Small-Animal Practice. Ullrich, K. (1938.) *Tierärztl. Rdsch.* **44.** 38. 620-624. (6 refs.).]

In a clinical communication the author stresses the fact that prontosil is only of value when combating certain pyogenic infections. In the treatment of animal disease its use is limited when compared with its applications in human medicine.

The affections occurring in small-animal practice in which prontosil is indicated are grouped under five headings:—

1. Diseases of the upper respiratory tract, excluding canine and feline distemper.

In this category we have the dog which has a high temperature and suffers from a painful, tender condition of the pharynx—in simple language, a sore throat. Absence of other symptoms or the fact that the dog has previously had distemper excludes this latter disease. Prontosil treatment brings about complete recovery in two days.

2. Diseases of the gastro-intestinal tract excluding distemper.

3. Wound infection including post-operative sepsis.

4. Ascending infection of the urinary tract, *e.g.*, cystitis.

5. Infection of the female genital tract with constitutional disturbance, *e.g.*, post-parturient sepsis.

Cases are discussed in detail under each heading.

A 5 per cent. solution of prontosil is used, and is administered intramuscularly, one or more injections being given daily for as long as necessary. No untoward sequelae have been observed after a prolonged course of treatment.

Dosage is governed by body weight, and a useful guide is as follows:

	From	*To*
Toy dogs and cats	0·75	1·5 c.c.
Fox terriers and dogs of similar weight	2·0	3·0 c.c.
Pointers and dogs of similar weight	4·0	5·0 c.c.
Very large dogs	6·0	8·0 c.c.

Prontosil appears to be of no value in canine and feline distemper, furunculosis, suppurative otitis and pyometra. The author regards the last-mentioned affection as primarily a hormone derangement with infection as a secondary factor, and in his opinion hysterectomy is the only rational line of treatment.

It is unfortunate that no bacteriological findings are recorded.

C. F.

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[Treatment of Infectious Keratitis with Mercurochrome. Bardens, G. W. (1938.) *J. Amer. Vet. Med. Assoc.* **93.** 35-36. (5 refs.)]

The writer reports goods results from the treatment of a large number of keratitis cases in cattle, using solutions of mercurochrome in strengths of from 1 to 4 per cent. The use of the drug in ointment form is also recommended.

J. W. H. H.

PONIES IN PITS

In a paper on colliery horses and pit ponies, presented at the National Coal Convention recently held in London, Mr. Iestyn R. Williams, joint secretary of the Monmouthshire and South Wales Coal Owners' Association, said the number of horses employed underground in this country in 1937 was 33,000, compared with 73,000 in 1913. Physical conditions in mines varied very considerably, and, rapidly as the machine was replacing the horse underground, it would be many years, if at all, before we should see horses entirely removed from underground work. Personally he did not want to see that time arrive. He had a feeling that in some respects it was a great comfort to the men themselves to feel that there were horses in the pit.

Pointing out that pit ponies were to-day well fed and cared for, Mr. Williams said he thought that if a horse really had a chance of comparing surface with underground work it would choose the pit, where it had freedom from flies and inclement weather, and could not be forgotten in a cold, wet field overnight. If he were a horse he would rather work underground than on the surface in the conditions under which he saw the majority of horses working above ground to-day, even in a country like Britain, where animals were so well treated.

The Veterinary Record

December 10th, 1938.

The Loveday Report:

THE SCHOOLS; SOME FUNDAMENTAL CHANGES IN OUTLOOK CONSEQUENT UPON INCREASED STATE SUBSIDY

THE key-notes of this portion of the Report are struck in the following phrases:—

(1) *"None of the Schools in Great Britain is ideally situated"* (paragraph 49).

After outlining their proposals the Committee state:

(2) *"We do not pretend that the resultant location of Schools will be ideal"* (paragraph 51).

Hitherto, in our criticisms of the Loveday Report we have been concerned with topics that admit almost exclusively of scrutiny from the technical, veterinary standpoint. In sum, these criticisms have amounted to this: we regard the ideal of veterinary education presented by the Loveday Committee as one eminently in accord with the exigencies of the present day; they (the Committee) have failed only in a few of the more highly technical respects to give expression courageously to their ideal through a rather excessive, overweening solicitude towards compromising with an existing and somewhat patently outworn system. We must concede that it is to the extent we offer language of this kind in self-criticism, that the criticism we are justified in proffering upon constructive proposals such as are contained in the Loveday Report has force. Nothing is easier than to offer destructive criticism, and nothing is more useless, especially to ourselves, at the present time. Let anyone who feels inclined to criticise any of the proposals adversely therefore put forward alternative ones which will be more acceptable.

The chapters which deal generally and particularly with the schools and occupy about one-half the body of the Report are, as is evident from the phrases we have quoted, contentious—in some parts highly contentious. It is evident that the Committee have been confronted in drafting these chapters with considerable difficulties. It was to anticipate any unmerited adverse opinion which might be lightly hurled at the details of the proposals in these chapters that we have set out our criticism hitherto in the order in which it has been already published. We believe that the fundamental problems of veterinary education have been already treated. The means of applying these problems and co-ordinating them are naturally sequential. Yet, on the one hand, the means of applying them, at the schools, involves (*a*) for the first time in our treatment, increased financial expenditure, the major portion of which is to be derived from public funds, and (*b*) remodelling or even complete removal of establishments already in existence in which a considerable amount of capital has been sunk. And the co-ordination of veterinary education raises problems of reorganisation which touch the authority of the presiding nucleus of the body corporate — the Council, R.C.V.S. — a matter which needs to be examined later with the most delicate care.

There is fortunately in the Report a precise indication of what was in the mind of the Committee as the ideal location for a veterinary school. After having given solid reasons for closing the Glasgow school on its present site, the Committee came to the conclusion that the fourth veterinary school which, they maintain, is required for Great Britain, ought to be established at Glasgow. This location, they state, "possesses a combination of three favourable conditions which exist together nowhere else, a University with distinguished Schools of science and medicine, a neighbouring countryside that includes one of the most important dairying areas in Great Britain, and a long-established tradition of keenness for veterinary education" (paragraph 51). This statement gives concrete form to the general conceptions expressed in an earlier paragraph (paragraph 48) upon the ideal site for a school.

What are, then, the shortcomings of the other three schools in regard to location? In the words of the Report, they are the following:—

(*a*) The London School's main defect is that it is situated in the heart of the metropolis. It "lacks effective contact with the related sciences, and is remote from farms. The decision to rebuild the College on its old site was, in our opinion, mistaken, and portends increasing embarrassment over a long future" (paragraph 49).

(*b*) The Edinburgh School, although more fortunately situated, "lies in a district not particularly well suited for training in the treatment of what is economically by far the most important animal in the country, the cow. Whilst we do not under-estimate the importance

of other kinds of farm livestock, we attach more importance to training in the treatment, both curative and preventive, of bovine diseases than to any other single part of veterinary education" (paragraph 49). The school occupies, moreover, a cramped site of only one-and-a-half acres, and though with the further extensions recommended in the Report, it "will be adequately equipped as a central teaching institution," "its students will be handicapped in comparison with the students of other Schools in that no provision has been made for the teaching of the subject of animal husbandry at a Field Station . . ." (paragraph 95).

(*c*) "The Liverpool School, given an outstation for its hospital for large animals and for animal husbandry, has opportunity for laying special emphasis on bovine diseases, and also on the veterinary problems connected with poultry. . . . But the possibilities at Liverpool, though important in kind, are limited in extent; the School could not be enlarged without a costly rebuilding, not only of the strictly veterinary laboratories, but also of general departments such as that of physiology; whilst the River Mersey is an obstacle to the easy inflow of clinical material from farms on the Cheshire side" (paragraph 49). Then follows in connection with this school, in the special chapter devoted to it, what we conceive to be the most serious indictment in the Report: "We have failed to find indications that the vocational subjects are taught in a manner much more than theoretical . . ." (paragraph 70). This and the statements which follow to amplify it might be construed—unfairly—by some readers to indicate what has been already the outcome of a recent experiment in which veterinary teaching has been taken over by a university rather than, as elsewhere and traditionally, at "professional seminaries." This apprehension will not be altogether dissipated by the concluding sentence of the paragraph, from which we have quoted: "As a result of our visit to this School we could not avoid a feeling of disappointment at the difference between the staffing, accommodation and those amenities in those departments of the School which are normal to a University, and those which are essentially veterinary in character." Whatever the views of the critics of the Report, the Loveday Committee must be praised for their candour—a trait in their judgments generally which cannot but excite our gratitude.

Since the dates of the Committee's sittings events have moved in this country somewhat ominously to point out that the training of individuals whose vocation it is to be "physicians of the farm and guarantors of the nation's food supply" ought to undergo a somewhat drastic revaluation. We may now indeed contend that far more strongly than they have attempted in their recommendations, the Committee ought to have pursued their ideal. It is hoped that the improved organisation which the Committee have recommended for the supervision of education will strive incessantly towards the attainment of the highest standard capable of application. It is clear that it would be idle to attempt forthwith a complete solution of the whole complicated problem.

We may conjecture with a fair degree of certitude, from what the Committee have said about the "ideal" location of a school, what would have been their recommendations if they (the Committee) had not been shackled in effective pursuit of their objectives by the existence of establishments which they dared not eliminate. The deterrent reasons they give in the case of the London School are: "But the College has been rebuilt at a cost exceeding £300,000; the buildings are well designed and constructed, and the Treasury has made a contribution of £150,000 towards the capital cost. We feel bound, therefore, to accept the continued existence of the College in Camden Town as a datum in our survey . . ., noting that this School is particularly well situated to provide a training in the treatment of the small animals and horses of an urban population" (paragraph 49). Towards this school, the Committee recommends an increased capital State grant of £42,000 for the proposed field station, and an increase in the annually recurring State grant from £9,000 to £25,000 as a contribution to the total annual expenditure of the school, which, it is estimated, will amount to £54,500 in 1941–42 (the last year of the quinquennium under report). The quota of students for this school is placed at 250. When compared with the financial outlay on the London School, it would seem that the total sum recommended for the entirely new school at Glasgow, for which the quota of students is set at 200, is altogether out of proportion and presumably too low.

To establish this school, a total capital grant, to be provided entirely from State funds, amounting to £79,400 is recommended, comprising £40,000 for the provision of new

buildings at the University of Glasgow for the teaching of the pre-clinical subjects, and £39,400 for the out-station, virtually the new veterinary school, for the teaching according to the ideal programme, of the vocational subjects. The annual recurring State grant in 1941–42 is estimated at £12,900 (for the combined College and University scheme). The annual income of the College is at present approximately £10,000 (with no State grant); there will be a fall in income when the number of students is reduced to 200: this will be offset to some extent by the proposed increase in students' fees (to £35 in the case of Scotland), and it is assumed that these fees, together with contributions from local authorities and interest from investments, will be sufficient to meet maintenance expenses, apart from salaries.

We will need to say a few words again about the Edinburgh and Liverpool schools, but it is plain from the above financial statements, assuming them to have been correctly estimated by the Loveday Committee in the case of the projected Glasgow school, that the deterrent towards achievement of their ideal is not entirely a financial one. They have computed that the annual cost of the veterinary student to the State will be £75—a figure which is very low in comparison with the support given in some continental countries. This figure, however, takes into account only the proportion of the recommended annually recurring State grant, and it leaves out of account the large addition that must be made to it to cover interest rates and depreciation on capital expenditure and any sources of annual income, such as grants from local authorities and subscriptions, which may be contributed by the public. Even with the recommended increase in students' fees (to £40 annually in the case of the English schools and £35 in the case of the Scottish schools) the additional contribution of the public to the cost of educating the veterinary student will rise to well over twice the amount of the fees paid. We need not calculate precisely these figures, or estimate the extent of the disparity between the costs of running an institution, like the proposed new Glasgow school, specifically planned to meet the national needs, and the sums to be spent in keeping up the London school, which in the view of the Committee will portend "increasing embarrassment over a long future." It may be that the Committee are right (paragraph 102) in stating, in their conspectus of financial recommendations, as a probable cause of the disparity: "it should be noted that by their co-operation in veterinary education these Universities reduce the cost to the State of instruction and that they also provide many amenities and facilities for students."

Before proceeding further, however, it must be noted that the figures which the Committee give to carry into effect their recommendations at the Liverpool School do not altogether support the view that the costs to the State are cheaper when veterinary education is carried out more intimately under the wing of a university than at a separate veterinary college. The quota of students for this school is set at 125. By inference (paragraph 73) they envisage that this school should be developed to provide educational facilities which are not readily obtainable at the London school: "There should be in England a School provided with special facilities for training veterinarians in the treatment primarily of cattle and secondarily of other farm animals and poultry, and the existing School at Liverpool—which in any case needs to be strengthened if it is to be carried on satisfactorily—ought to be developed to meet this need." The extra capital cost already incurred in providing education at this school has amounted to some £21,000 in respect of sites and buildings and £45,000 through the endowment of two chairs from the University, together with a sanctioned Government grant of £15,000 as a contribution to the cost of new buildings. The Loveday Committee now recommend a further Government capital grant of £100,000 towards the cost of new buildings at the University, together with an additional £36,000 for the provision of a field station and hospital for large animals. It has already been noted that the Committee felt unable to justify the grant of large sums of public money towards training for the needs of dogs and cats. Part of the capital sum to be expended at Liverpool is, however, for a "clinic for small animals and a few large animals . . ." (paragraph 75). The present annual cost of the school to the University is said to be "some £14,000 gross, towards which an income of rather more than £6,000 is received from non-Government sources (fees, endowments, etc.), and a block grant of £2,850 from the Ministry of Agriculture." The Committee recommend that this block grant ought to be increased to £8,000 annually for the five-year period under report. The costs of maintenance of the field station and hospital are not included in this

grant and the extra sums are to be provided out of grants assessed departmentally.

Where, therefore, there has been some experience in conducting veterinary education at a university the expenditure of public money required to turn out students who shall have had a vocational training definitely better than what has been stigmatised by the Loveday Committee as nothing short of lamentable seems to be very much higher than what they have computed for Glasgow.

The costs of the Edinburgh school—the second largest centre of training—are readily available. The new buildings, which date from the transfer of the school to its new site in 1916, cost about £75,000, of which the State gave £48,400—a capital sum, it will be noted, far below that recently expended on the London school, although the recommended quota of students is only slightly smaller, namely, 225. Extensions to the school have already, however, been proposed at an estimated cost of £40,000, to which the State has offered £20,000. These extensions have, in fact, been commenced and part of the new buildings is complete. The Loveday Committee consider that the plans for the extension are not sufficiently comprehensive and recommend an additional State grant of £36,000. A field station, which is much to be desired, would cost another £20,000. We are happy to hear that there is a likelihood this project will shortly materialise. The total estimated expenditure of the school, after the recommendations have been given effect, in 1941–42, will be £32,000. To meet this, receipts in the shape of students' fees, income from the College practice, etc., will amount to £16,250 in that year, so that the State will be asked to make an annual contribution of £14,000.

A very condensed summary of the financial position of the schools brought about by giving effect to the Loveday recommendations will invite many comparisons, criticisms and reflections. The sums to be found by the taxpayer will appear, no doubt, to outside observers, surprisingly large, but, as the Loveday Committee rightly point out, they are small in comparison with those which many continental countries have deemed necessary to set aside to promote veterinary education. In Holland, for example, the annual cost to the State of each veterinary student is £300; in Norway, £311; and, in Sweden, £116.

Nevertheless, this greatly increased State expenditure upon British veterinary education, which had been traditionally starved of State support, is a new departure in the history of the British veterinary profession, which must have fundamentally important consequences upon its whole organisation. It has often been alleged by civil administrators that the ignorance of technical workers upon elementary matters of State finance is a source to them of real and unending despair. Few workers in our own field remind themselves that no financial machinery existed in the British constitution to subsidise enterprises of the kind under consideration on the above scale until the creation of the Development Fund in 1910, and that one of the canons of granting State subsidy is that there must be some measure of State control—over the expenditure of taxpayers' money. Fortunately, on the Loveday Committee one of its members was a distinguished civil administrator, and so we may rest assured that the financial recommendations were regularly conceived and will pass the scrutiny of Treasury officials. Hence, to obtain the support that is essential to adapt veterinary education to modern needs, it is imperative that the veterinary profession should reconcile itself to a changed outlook —that of a greatly increased measure of State control. We stress this fundamental matter advisedly, for it seems that a good deal of ill-judged criticism of the Loveday Report prevails upon minor points of detail, and little attention is directed to the essential merits of recommended changes which must now be considered seriously. One of these changes refers to the increased association of the schools with the universities. Some will doubtless be bitterly hostile towards any apprehended sacrifice in the independence of the schools. With the greatly increased financial aid forthcoming from the State, however, and the increased control which the State must exercise in consequence over the schools, the inevitable result will be, unless the schools place themselves under the shelter of the universities, that they will become mere departments of State.

In the short chapter (X) on the staffing of the schools and salaries, the Committee conclude that the scales they recommend "should be adequate to attract those who intend to follow an academic career, provided facilities are available for research and subsequent advancement" (paragraph 55). This desideratum is eminently attainable when veterinary teaching is administered under a university system of control. It is becoming evident that it is not clearly attainable at the autonomous schools,

and unless they become constituent colleges or schools of the local universities, we foresee that it is most unlikely that the members of their staffs will be able to enjoy the degree of academic freedom which has contributed so successfully to the advance of other sciences. An ex-Prime Minister, Lord Baldwin, weightily pronounced upon these alternatives a few months ago at Swansea in an address given at a function of the University of Wales when he declared: "When learning becomes prostituted to politics there are no depths to which it cannot descend. Moreover, the university must never lose sight of this, that it should be the home of research throughout the country and throughout the world. Never let the universities of this land of ours allow any Government at any time to have any finger in the administration of these universities. . . ." We sincerely hope that the words of this wise statesman will now commend themselves to the veterinary profession, in deciding the destiny they wish to choose under the fundamentally changed conditions of our existence.

RELATION BETWEEN OVARIES AND UTERUS DURING PREGNANCY

"The golden hamster, *Cricetus auratus*, is a comparatively new laboratory animal, having been introduced from Syria in 1932. It is now fairly widely distributed, for it is easily reared and managed under laboratory conditions. The length of pregnancy is only 16 days, which is shorter than that of other laboratory rodents. M. Klein (*Proc. Roy. Soc.*, B., June, 1938) has investigated in it the relation between the ovaries and uterus during pregnancy. Ovariectomy between the ninth and thirteenth days brings pregnancy to an end. Injection of progesterone and oestrone simultaneously into the ovariectomised hamsters maintained pregnancy in some instances up to parturition. The duration of the corpus luteum of pseudopregnancy is noticeably shorter than in true pregnancy. Complete removal of the uterus between the eighth and thirteenth day of pregnancy results in the rapid regression of the corpora lutea and the initiation of the ovarian cycle. The removal, by Caesarean section, of the foetuses only, leaving the placentae inserted, does not shorten the duration of the corpora lutea or remove the inhibition of the ovarian cycle. No interpretation of the mechanism connecting the uterus to the ovary is suggested."—*Nature.*

* * * * *

Mrs. G. McVay's British Alpine champion goat, Bitterne Penelope, has produced 5,080 lb. of milk in a recorded year. She yielded well over 100 lb. in some weeks. Now seven-and-a-half years old, Penelope has produced 22,425 lb. 2 oz. during the past five recorded years.

REVIEWS

[**"Fifty Years a Veterinary Surgeon."** By Sir Frederick Hobday, C.M.G., F.R.C.V.S. Hutchinson & Co., Ltd. pp. 288, with 31 illustrations. 10s. 6d. net.]

This book of reminiscences by a prominent member of our profession makes very interesting reading. It is quite obviously written for the lay reader in the first place since so much of it is common knowledge to most veterinary surgeons. All the same we feel that members of his own profession will be very absorbed in reading Sir Frederick's book entitled "Fifty Years a Veterinary Surgeon." We suppose a little literary licence is permissible in the title as we observe that Sir Frederick became a veterinary surgeon in 1892, but with the periods of pupilage and studentship included the half century must have been reached. Our author has covered an enormous range in his experiences which include his early college association, his war experiences, his extended period in general practice and his return to his *alma mater* as Principal. Much interesting information is given of his methods of tackling his first task of raising funds for the rebuilding of the Royal Veterinary College and the great success that attended his efforts. Pictures of the old college in its tumbling-down condition and of the magnificent new main block speak for themselves. It is a good thing to have a standing record of this kind available for future reference.

A curious mistake has crept into the table of contents where it is suggested that a "*cure*" for glanders had been discovered by two Russians. The obvious reference should have been to mallein as a diagnostic agent, possibly a more useful discovery since by its aid glanders can be eradicated as has already been done in this country.

Many intriguing experiences are related and not least is that of Sir Frederick's continental chase after dog-stealers.

We recommend this interesting book to all, and it may even be considered as a useful Christmas gift to anybody interested in animal welfare.

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[**Dairy Bacteriology.** By Bernard W. Hammer, Ph.D. Chapman & Hall. 25s. net.]

A knowledge of dairy bacteriology is important for three main reasons: firstly, diseases of both man and animals are at times spread by way of milk and its derivatives, the presence of such organisms in milk being particularly serious because dairy products are frequently consumed in the raw state; secondly,

many bacteria are responsible for undesirable changes in milk and its derivatives and a knowledge of these is therefore of importance to the producer and distributor; thirdly, the texture and flavour of many dairy products, in particular cheese and fermented milk, are largely due to the development during manufacture and ripening of certain micro-organisms, a knowledge of which is essential if products of uniformly high quality are to be produced. Hammer's book covers all of these aspects well. Chapters are included on bacterial counts made on milk for various purposes; on the various fermentations, normal and abnormal, which may occur in the milk; the sources of contamination and the growth of organisms in milk and cream; the presence of body cells in milk; the spread of diseases through milk and its derivatives, including those diseases in which the material comes primarily from animals and those in which infection arises from human sources (63 pages); the preservation of milk and cream; milk enzymes; the bacteriology of evaporated, condensed or dried milk, of ice-cream, of butter and butter cultures, of fermented milk preparations, and of cheese; and, finally, tests for the quality of milk and cream.

Standard methods for the bacteriological examinations of milk are not included, nor are detailed descriptions of organisms, the author believing that in the latter case it is better to consult books dealing with determinative bacteriology and detailed descriptions in original reports.

Numerous references are given in each chapter to original publications. Most of these are from American sources but a fair proportion are from British sources. Very few references are, however, made to any work which occurs in a language other than English, and little reference is made to the observations on clean milk production which have been carried out in this country. A few other minor points regarding the section on the spread of disease through milk may be commented upon, *e.g.*, on page 174 the paragraph headed "Infection of milk from Brucella organisms," is given to details of the longevity of *Brucella abortus* under various conditions, the author having dealt with Brucella organisms in milk previously. Again, on the same page, discussing the inoculation of guinea-pigs for the detection of Brucella organisms, no reference is made to the use of centrifugal deposit. On page 175, a statement appears that "*Brucella suis* is apparently more virulent for man than *Brucella melitensis*." On page 176, it is stated without further comment that in European countries many cases of foot-and-mouth disease in man have been reported, sometimes "in epidemic form."

These comments, however, should not be read as seriously depreciating the usefulness of this work. Hammer's "Dairy Bacteriology" is a book which will be of considerable value and interest to our readers, whether in practice or in whole-time employment.

REPORTS

ARMY VETERINARY SERVICES

STATISTICAL AND GENERAL REPORT, 1937–1938.*

The following is a précis extracted from the above Report.

Great Britain and Northern Ireland

Horses.—The average strength of horses in the British Army during the year was 6,038, the average age being a little over eleven years.

The wastage of horses for veterinary reasons remained practically the same as for previous years. In studying the chief causes of admissions, wounds, contusions and galls constitute the main causes of inefficiency, then sprains and lameness cases, particularly foot lameness, still exact a heavy toll. Admissions for respiratory and digestive diseases for the year 1937–1938, show a marked decrease as against those for the previous years. Roaring and broken wind play a large part in inefficiency. Entozoa (worm infestation) is controlled by diagnosis of faecal matter and systematic resort to medication by the stomach pump. Grass sickness breaks out sporadically and when horses are affected no cure seems to be of any avail. No cases of sarcoptic or soroptic mange were reported during the year under review.

There were no admissions for specific diseases except for eight cases of strangles.

Mules.—Mules have practically disappeared from the British Army in Great Britain in the same way as have all draught animals.

Royal Army Veterinary School, Aldershot.—The Royal Army Veterinary School, Aldershot, has now been closed and a Royal Army Veterinary Corps Laboratory established in its place. The work of the Laboratory consists of research, radiology and the production of mallein, vaccines and biological products for the use of the Army. Horse blood and serum is also supplied to the Royal Army Medical Corps.

Radiology.—Radiology plays an increasingly important part in the diagnosis of disease

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amongst Army animals and during the year 175 horses were X-rayed and 416 exposures were made. Improved technique has been introduced to facilitate the examination of the head and neck and some of the less accessible joints of the limbs of horses. An investigation is being carried out to determine whether radiological examination will reveal osteodystrophic changes in the horse sufficiently in advance of the appearance of clinical signs of the disease to make it of practical use.

Research.—The relation of the parathyroid gland to chronic lameness in the horse is being studied, and there is in progress the study of the relation of stable management and hygiene to the infestation of horses with intestinal entozoa.

School of Farriery, Aldershot.—The School of Farriery, Aldershot, has been closed down.

The Royal Army Veterinary Corps has established a farriery side in its other ranks; personnel and garrison forges under the aegis of the Royal Army Veterinary Corps have been established in the principal stations in commands at home and in Egypt.

All farriery duties of units other than horsed cavalry and horsed artillery will in the near future be undertaken by the farriery section of the Royal Army Veterinary Corps.

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KENYA COLONY

REPORT OF THE VETERINARY DEPARTMENT, 1937

This is the first annual report emanating from the recently created independent Department of Veterinary Services. Up to this, the veterinary reports from Kenya were included in those of the Director of Agriculture, under whose control the veterinary services were until 1937. The removal of veterinary services from the controlling influences of an agricultural director in a Colony of the importance of Kenya is a notable event which may well have wide repercussions to the benefit of our profession at home and overseas, provided the Kenya enterprise proves successful. Consequently a big responsibility rests with the new Director of Veterinary Services in Kenya to ensure this success.

The new department is wisely constituted. There are a director, two deputy-directors (one in charge of field services and other of laboratory services), a field staff of veterinary offices and laymen, and a laboratory staff of research officers and various lay assistants. The headquarters of the department has been removed from the administrative capital, Nairobi, to Kabete, a few miles distant, where the research laboratories are situated. This also seems to be a wise move, for it should allow of intimate collaboration between the administrative, field and laboratory sections of the department. The responsibilities and duties of the department are considerable. They cover the entire and diverse activities associated with the development and welfare of the livestock industry of the Colony, which nowadays must be one of its greatest assets and is likely to become its chief source of wealth once disease is effectively subdued. Already a scheme for exporting beef under chilled conditions to the home market is under consideration, while the exports of butter, cheese and wool are already of considerable dimensions for such a young Colony.

The disease situation is reported to be unchanged on the previous year although it would appear that rinderpest—the Colony's worst disease—is gradually being suppressed. In the research section work has been impeded considerably by an insufficiency of research workers and increase in routine duties; nevertheless, many important experiments were conducted and some interesting results obtained, reference to which is precluded for reasons of space.

W. K.

INSPECTORS FOR GRADED MILK IN SCOTLAND

A staff of six milk inspectors, six assistant milk inspectors, and a chief inspector has been appointed by the Department of Health for Scotland to assist local authorities in arriving at a uniform standard of administration of the Order relating to licences for the production of graded milk. These appointments are also intended to ensure that there will be equality of treatment to producers in different areas in the payment of Exchequer-assisted premiums for which provision is made in the Milk Industry Bill.

The inspectors will examine dairy premises for which producers' licences, authorising the use of the special designations "Certified," "Tuberculin-Tested," or "Standard" are granted by local authorities. They will be available to assist and advise local authorities in all matters connected with the Order. The inspectors and assistant inspectors hold university degrees in agriculture, or diplomas in dairying, or the Sanitary Inspector's Certificate. In addition to practical experience of milk production in England and Scotland, a number have had experience of the dairying industry in the United States, Australia, Denmark or Holland.

* * * * *

The United States Congress has prohibited the interstate distribution of any combination of milk, cream or skimmed milk with any fat or oil, other than milk fat, so as to resemble or imitate milk or skimmed milk in any form. "'Filled' milk," Congress has stated, "is an adulterated article of food injurious to public health, and its sale constitutes a fraud on the public."

N.V.M.A. DIVISIONAL REPORT

Yorkshire Veterinary Medical Society*

MEETING AT LEEDS

A quarterly meeting of the Society was held in the Hotel Metropole, Leeds, on the afternoon of Friday, October 28th, 1938.

The President, Mr. W. R. McKinna, M.R.C.V.S., D.V.S.M., occupied the chair, and the following members were present: Messrs. F. C. Scott, J. M. McKellar, A. Cruickshank, W. T. MacGregor, J. O. Powley, Lieut.-Col. J. A. Dixon, Messrs. E. Ackroyd, T. C. Hall, W. A. Campbell, W. Crawford, E. F. Hardwick, D. V. Sinclair, W. Andrew, and A. Riggs. Messrs. E. Varley, H. McEnhill, and Professors N. M. Comber and J. MacGregor were present as visitors.

Apologies for absence were received from Major D. S. Rabagliati, Messrs. A. H. Watson, J. W. Procter, G. V. Tyerman, and P. Fernie.

The minutes of the last quarterly meeting, having been published in the *Veterinary Record*, were taken as read, and adopted.

Correspondence.—The following correspondence was submitted:—

(1) From the General Secretary, N.V.M.A., bringing to the notice of the Division a recommendation from the Society of Veterinary Practitioners, that Divisions be requested to arrange demonstrations in *post-mortem* and laboratory technique within their areas. After a short discussion it was resolved that the matter be referred to the council of the Society.

(2) From the Secretary of the Adrian Jones Statue Appeal Fund, explaining the need for a further £563 2s. 0d. to enable the completion of the work on "Duncan's Horses," and asking the Division to consider a subscription to the Fund. It was proposed to defer the consideration of a donation till the January meeting, when such voluntary subscriptions are usually voted.

Resignations.—It was decided to accept with regret the resignations of Messrs. W. Halstead, A. R. Withers, and R. S. Smyth. The Secretary was instructed to write wishing these gentlemen success in their new spheres.

New Members.—Mr. J. F. D. Tutt (Winchester) was elected to membership of the Society, and Messrs. E. Varley and H. McEnhill were nominated for membership.

Finance.—The Treasurer's financial statement was adopted on the proposition of the President, seconded by Mr. W. T. MacGregor.

It was reported therein that the last social evening had shown a profit of £7 2s. 6d, and it was decided that another dinner and dance be held in the coming year. A sub-committee comprising the President, Lieut.-Col. Dixon, Mr. Crawford and the Secretary was elected to make the necessary arrangements.

Election of Officers

The following were elected as office-bearers for the ensuing year:—

President.—W. R. McKinna.

Vice-Presidents.—D. S. Rabagliati, J. W. Procter, E. Ackroyd.

Hon. Treasurer.—F. C. Scott.

Hon. Secretary.—A. J. Adams.

Auditors.—A. H. Watson, W. Crawford.

Council.—W. Campbell, J. A. Dixon, J. M. McKellar, G. V. Tyerman, G. Whitehead, T. C. Hall, A. Riggs, G. S. Donaldson.

Proposed Poultry Course

The President, in introducing the subject of the proposed poultry course, said that because of the excessive losses in the poultry industry, the Poultry Technical Committee had recommended the formation of panels of veterinary practitioners with special knowledge of poultry diseases and husbandry. On this recommendation the N.V.M.A. had advised each Division to hold short refresher courses. With this point in view, the council had authorised him, with Mr. Powley, to approach Professor MacGregor, of Leeds University, to find out what facilities there were at the university farm at Askam Bryan. Professor MacGregor had been very helpful, and with his aid the present syllabus had been drawn up.

Mr. McKinna proposed that the syllabus be adopted in its entirety, for, although a certain amount of inconvenience would be involved in attendance, the present course was the absolute minimum consistent with efficiency. He begged members to give the course their support and attend the lectures. A good attendance would be the best means of showing their appreciation of the kindness of Professor MacGregor and his staff, who were kindly placing at their disposal the facilities and equipment of the farm at Askam Bryan.

Mr. Powley, in seconding the adoption of the syllabus, reminded members that the course was free, and would be of great use. Professor MacGregor had readily undertaken to give his services, and he would assure members that they would see at Askam Bryan all the appliances now used on the modern poultry farm.

It was agreed to adopt the syllabus in its present form.

*Received for publication November 12th, 1938.

[In connection with the above course, Mr. A. J. Adams (Hon. Secretary of the Yorkshire Division) writes (December 3rd, 1938): "The above Society has just completed a short but comprehensive refresher course in Poultry Husbandry and Disease.

"Mr. W. Lyle Stewart, M.R.C.V.S., in two lectures, dealt with the more important diseases. At the second lecture, tuberculin testing, blood sampling and *post-mortem* technique were demonstrated.

"Two very interesting and instructive afternoons were spent at the University of Leeds Poultry Farm, Askam Bryan. Here Mr. C. W. Goode and his colleagues dealt with the development and organisation of the industry, and poultry husbandry in general. The lecturers made full use of the facilities at hand to demonstrate the various points in their lectures. These included the different breeds, how to judge the laying capacity of birds, and the choosing of potential breeders; the choice of eggs for hatching and their treatment, before, during and after incubation, and the rearing and care of chicks once hatched.

"The course was greatly enjoyed by all who attended, and thanks are due to the lecturers who so willingly gave their time. Thanks are also due to Mr. Powley and the Laboratory of the Ministry of Agriculture for the loan of pathological specimens."—*Editor.*]

Diseases of Young Chicks

Mr. W. Lyle Stewart, Kings College, Newcastle-on-Tyne, now gave a paper on the above subject, which was listened to with great interest. The lecturer divided the causes of losses amongst young chicks into the main headings given below, and dealt with the points which follow.

(1) Faulty strains of chicks. Stress was laid upon the importance of breeding from mature birds of good type. The value of trapnest records was discussed. The date of hatching is important. The care and management of the breeding pen.

(2) Faulty methods of hatching. The source of the eggs and their freshness are important. The temperature and humidity of the incubation room. Dead in shell. The importance of ventilation.

(3) Faulty rearing and feeding. Warmth, ventilation and hygiene are essential. Chills, brooder pneumonia and suffocation were dealt with and the *post-mortem* findings which are typical. Vitamins and vitamin deficiency. Slipped tendon, fits and convulsions, cause and prophylaxis.

(4) Micro-organisms. Contagious diseases. Bacilliary white diarrhoea. Causation, diagnosis and control. Bleeding of fowls. Two completely negative tests are necessary. Fowl pox.

(5) Parasitic diseases. Coccidiosis. Causation, diagnosis, prevention and immunity. Worms. Ectoparasites. Red mite and lice.

Discussion

Mr. Powley, in rising to open the discussion, said he would like to thank Mr. Lyle Stewart for the very interesting paper. He drew the attention of members to the memoranda of the Ministry of Agriculture describing the action taken in the control of poultry diseases under the Diseases of Animals Act, 1935, and the leaflets describing the free services to "accredited" flocks. He was sorry to say there was no "accredited" flock in Yorkshire. In connection with these "accredited" flocks, he would like to remind members that veterinary surgeons would have to play an important rôle in the work in freeing them of disease. Continuing, Mr. Powley said that cod liver oil was a valuable ration to feed chicks. If anyone present wished to see the effect of vitamin deficiency in chicks, they should visit the British Cod Liver Oil Co., at Hull. In his opinion coccidiosis was due to repeated massed infection rather than to a single dose. Did Mr. Lyle Stewart find that the harvest bug caused any harm in chicks? The bug was indigenous to corn-growing districts and caused some harm in horses and sheep. As regards tuberculosis in poultry, the Ministry were to give free testing to accredited flocks in an effort to stamp out the disease.

Mr. Sinclair asked how long it took soil to become free from coccidiosis, and if the condition slipped tendon could be cured.

Mr. W. T. MacGregor wanted to know how to get blood from a cockerel which appeared to have none. He had recently experienced great difficulty in obtaining a sample from a cockerel for export; probably he had not been sufficiently "bloody and bold." With regard to testing for B.W.D., was one test enough? Was there not a period between infection and ability to react to the agglutination test? Was the cock of any importance in the transmission of this disease? Did Mr. Lyle Stewart advise keeping the survivors of an infected batch of chicks?

Professor MacGregor, of Leeds University, invited to contribute to the discussion, said that he was afraid that he could not add very much as he was not connected with the poultry department. He described an outbreak of coccidiosis which they had experienced at the farm at Askam Bryan this last spring. He thought that a heavy intake of lime had acted as a predisposing cause of the outbreak. Lime had been spread, as was usual, but owing to the lack of rain it had not been washed into the soil but had lain on the surface in lumps.

Lieut.-Col. Dixon thanked Mr. Lyle Stewart for his excellent exposition on poultry diseases. He thought that something should be done about the

incidence and methods of dealing with tuberculosis. He stated that it had become necessary at Smithfield Meat Market to examine all poultry sent in because of the heavy incidence of this disease; was not this a direct result of the "accredited" scheme? The Authority in Leeds tried to enforce the Poultry Markets and Receptacles (Disinfection) Order, 1936, but with very little success. They found no difficulty with the property of the market, but they found that they could not enforce the cleansing of the crates brought into the market, as the owners would reply that they were going back to premises from whence they came.

Mr. W. A. Campbell asked the speaker if he knew of any serum or vaccine which was of use in blackhead of turkeys. There was quite a lot of a proprietary article sold in his district which the farmers said was good.

Mr. F. C. Scott observed that he believed myosalvarsan was better for use in young birds than neosalvarsan, being less irritant, while it could be used intramuscularly.

The President, before closing the discussion, said that up to date the average veterinary practitioner had not regarded poultry work as of much importance. The reason for this was that it was not economically worth while for the small poultry farmer to ask advice, or treatment, for the individual bird, and the small man seemed to be quite resigned to repeated loss over a period. However, now that the Accredited Poultry Breeders' Scheme was being brought into force it was the duty of everyone to become *au fait* with poultry diseases.

Mr. Lyle Stewart, in reply, admitted that the harvest bug did cause some trouble in sheep and horses, but said that he did not think that it caused any harm in poultry. Slipped tendon was caused by feeding nitrogenous foods to chicks which were not fit to stand up to it. Treatment was doubtful, but it was advisable to dilute the ration with 50 per cent. bran; there really was no cure—slaughter was the best policy. With regard to the time between infection with *S. pullorum* and reaction to the agglutination test, it was possible to get reactors five to six weeks after an outbreak had subsided. It was possible for fowls to pick up infection and never show it clinically; they would become carriers. These birds were a danger to the importer. A wise man would buy new stock subject to them passing the test, and then isolate and retest in four weeks. An infected cock could spread the disease but was not an important factor; however, all reactors should be slaughtered, irrespective of sex. He would always advise owners to slaughter reactors and not feed them for the table. Professor MacGregor's experience with lime was very interesting. It was quite probable that the excessive lime intake had caused a breakdown in resistance to caecal coccidiosis. It took at least 18 months for pasture to become clear of oöcysts, but the time depended a lot on climatic conditions, and one season was not enough to leave infested ground free of poultry. He was pleased to hear that the Professor approved of the folding unit. It was simple to move, thereby making it an easy matter to prevent the repeated massed infection with oöcysts. Coccidiosis in laying birds was not so common in Britain: it was mostly found in birds brought up on wire, for they had not acquired the immunity which birds reared on soil undoubtedly had. There was no serum nor vaccine to combat blackhead. The proprietary article was probably just a solution of some arsenical compound. As regards the use of myosalvarsan, it was undoubtedly less irritant, but neosalvarsan was more commonly used. In taking blood samples, there was no fear of sepsis, for the rules of inflammation which applied to mammalians did not hold for poultry. It was enough just to wipe the needle on a pad of wool soaked in spirit. It did not seem to matter even if the axial vein was completely severed, but usually a simple puncture with a sharp needle sufficed.

Any Other Business.—Messrs. C. S. Smith (Barnsley) and J. Clarkson (Scarborough) were elected as Honorary Associates of the Society.

A. J. Adams, *Hon. Secretary.*

Some Contemporary Contributions to our Knowledge of Animal Husbandry*

(*Continued from page* 1674.)

Grass Drying

The third article for consideration is one which does not lend itself to a full abstract so readily, since much of the forceful language in which some of it is written will perforce suffer by being compressed. Dr. Darke contributes a short general semi-historical survey and adds those theoretical arguments in favour of and against the principle, which have now became familiar to most of us.

He points out that costs of processing have overall been greater than was originally expected. Efficient modern methods may reduce costs to below £5 a ton, but in most cases the costs are £6 a ton or more. The machinery and equipment are definitely costly and depreciation charges are heavy if they have all to be borne by the dried grass. This has led to a survey of the possibility of drying other crops, but without much success so far, if we except dried lucerne and clover, which are in effect competitive with dried grass since they become due for drying at the same time. Where grass-drying can be carried on as a factory process, as distinct from a regular farm process, different considerations apply to it. If it must compete with grazing, hay-making, and must give way before the former of these in the event of drought or inclement weather, etc., it must obviously not be regarded as a factory process. Consequently, some of the conflict of

*J. Min. Agric., October, 1938. 45. 7.

opinion which has hitherto occurred may be reconciled by considering whether the process on any farm is to be regarded as a primary (or factory) process, or whether it is to be regarded as an integral part of normal farming practice, *i.e.*, a farm process.

The rather obvious conclusion at which we must arrive at present is that so far grass-drying is only in the experimental stages. Much yet remains to be discovered. Machinery is not yet by any means perfect, and sufficient experience and knowledge concerning the technique of the process has not yet been gained by either farmer or farm labourer. It is interesting, therefore, to read two accounts, opposite in view, by practical farmers concerning their experiences during recent seasons.

The first of these is by Mr. Russell Wood, who farms in Hertfordshire. In 1937, some 99 tons of dried grass were produced, at an average cost per ton of £6 1s. 3d. To some extent the high cost appears to have been due to faulty functioning, low output per hour, late start, inexperience, and so on, while the quality of the product was not up to expectations.

It was found that instead of 9 to 10 lb. of dried grass replacing 6 lb. of concentrates for dairy cows, it would only replace some 4 lb. The average protein content on a basis of dry matter was only 13 per cent. The amount of fuel (coke) after adjustments to the machine was about 11 to 12 cwt. per ton of dried product, and the output was increased from an original 1 to 1½ cwt. per hour up to 4 cwt. or even 8 cwt. of dried grass.

In 1938, drying was commenced on April 29th, and owing to the exceptionally dry summer, which resulted in a slow rate of growth of grass, costs were heavy and yields per acre low. Up to July, 125 tons of dried grass were produced, of which 22 tons only were of "super-hay" quality. Until July 18th no grass grew and the plant had to be shut down. An estimate of costs for the season is about £5 per ton.

Yields varied considerably. Field A of permanent grass, for example, gave yields of about 4½ cwt. per acre at the first cut on May 6th, 8¾ cwt. per acre at second cut on June 9th, and on July 22nd at the third cut only 5¾ cwt. One-year mixtures gave better yields. For example, at the first cut field E gave 26¾ cwt. per acre, at the second cut 18 cwt., and at the third cut about 10 cwt.

The results are incomplete since the weather during Autumn has been favourable for growth of grass, and further cuts may be possible.

We gather from the general tone of the article that Mr. Russell Wood, in spite of the setbacks he has experienced, is to be classed amongst those who support the principle of grass-drying as an adjunct to other farming operations, although we cannot regard him as being highly enthusiastic.

We make no apology for reproducing Mr. Clyde Higgs' opening paragraph verbatim, for it and his final sentence, leave no doubt in our minds what he thinks about grass-drying. He says:—

> "I have viewed the prospect of grass-drying through rose-coloured spectacles; I have practised it in the cold light of hard facts; and now, looking back on my experiences from a distance, I am comforted by the tag that 'the man who never made a mistake never made anything.'"

His last sentence reads: "No, I do not think the salvation of British agriculture rests on grass, much less on grass-drying."

Mr. Clyde Higgs farms in Warwickshire, and possesses a large herd of Ayrshire cows. He has been an ardent advocate of grass-drying, but his experiences have led him to change his opinions, and his comments are well worthy of careful consideration.

His remarks refer especially to farm grass-drying. He states that he was one of those who fell under the spell of permanent grass farming, and had to saddle himself with the enormous cake bills which go with it. He received a milk cheque in one hand and paid it over to the cake merchant with the other. Consequently, the idea of grass-drying appealed to him with an especial appeal.

He commenced operations in 1935 when 100 tons were dried. He passes over, with a mention only, the extra worry, trouble and labour involved in running two grass-driers for nearly six months, but this is an important factor to be considered. In 1936, 600 tons of dried grass were produced, varying from 8 to 19 per cent. crude protein, but cake bills continued much as before. The approximate cost was £5 16s. 0d. per ton. In 1937, with another type of machine, results were even less satisfactory, and it was concluded that "the best thing to do with grass-drying was to abandon it."

Mr. Higgs has decided, and since then a consensus of opinion has also shown, that it costs about £6 per ton to produce dried grass, which is very much the same price as dairy cake. Dairy cake has a protein content of about 22 per cent., while very little dried grass comes near this figure. Among 46 samples in 1936 and 43 in 1937, the average protein content was 13·5 per cent., and he found that the protein content was exceedingly variable in grass samples from the same field and even from day to day.

Apart from protein, dried grass contains carotene, but the question is asked: What is the good of carotene? One answer is that it colours the milk. But so do carrots, silage, kale, or 10 per cent. of Channel Island cows added to the herd! Further, colour in milk is only of value to the producer-retailer: to the wholesaler milk is simply milk! The second answer is related to carotene as a precursor of vitamin A, but this vitamin is available from other sources such as silage or kale. [These are sound and practical answers, but we are inclined to think that Mr. Higgs' disposal of the feeding value of dried grass on these grounds alone, may have been a little hasty.—*Editor.*]

An important point is made of the difficulty experienced in rationing cows with dried grass. With such a variable product, the rations have to be constantly changed and reorganised, involving further capital outlay. [A further point might have been made relating to the keeping qualities of dried grass. The loss of carotene, if stored in daylight, is rapid and it is probable that a certain amount of deterioration of amino-acid content in the protein also occurs with storage. Moreover, a disadvantage that has caused considerable trouble during the present season, is related to the silica content of the product. Some samples have contained up to 25 per cent. by weight of silica from sand and soil, and the 4 or 5 per cent. of allowable total silica has very often been exceeded during the current season.—*Editor.*]

Mr. Higgs points out that choice of efficient driers is limited, and that an installation to produce 2½ cwt. of dried grass per hour costs some £700. If the idea (at present somewhat prevalent) is that only a small acreage should be

put down for drying yearly, the heavy capital charge no less than the heavy costs of drying, depreciation, heavy fire insurance and other charges, become a serious burden upon the economy of the farm. Mr. Higgs' comment is: "Heaven forbid that we should exacerbate our financial troubles by buying further expensive machinery, which when it is wet will only do half its rated output, and, when it is fine, has nothing at all to do."

The conclusions he reaches are that not withstanding the importance of national defence and the great "paper" attractions of a policy of growing all our own cow food and being self-supporting, there is still a large bulk of by-product and offal produced, war or no war, which may as well be fed, and that hay at about £5 a ton, good oat straw, kale and other green crops can be produced even in an admittedly poor year, so that there does not seem to be any justification for making dried grass every year as an insurance against adverse weather conditions so unusual that they may only happen once in a life-time (*i.e.*, a year when no hay can be saved).

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Computation of the Cost of Foods for Livestock

The fourth of these articles is one by H. T. Matthews, B.V.Sc., F.R.C.V.S., and R. A. Morton, D.Sc., Ph.D., F.I.C., and concerns a new method for computing the cost of foods for livestock.

It is necessary to say at once that this article does not lend itself readily to a summarised account. It should be read in the original.

The authors firstly have constructed a nomogram (copyright reserved) by which a rapid calculation can be made of the cost per pound of starch equivalent for foods of differing values and differing prices. Starch equivalents and protein equivalents have been taken from the Ministry of Agriculture journal. In the second place, the authors have attempted a refinement in the method of assessing the feeding values of proteins with high biologic values.

The basic calculation upon which the nomogram has been constructed is as follows:—

$$Z = \frac{x \times 240 \times 100}{2240 \times y} = \frac{10{\cdot}71x}{y}$$

or alternately,

$$\log. z = \log. 10{\cdot}71 + \log. x - \log. y$$

where

x = price in £ per ton, or in shillings per cwt.

y = starch equivalent value.

z = cost per lb. of starch equivalent in pence.

In the nomogram, there are three vertical scale columns, separated from each other by definite distances. On the left-hand column, the scale reads in shillings per cwt. or pounds (stg.) per ton; in the middle column the price per pound of starch equivalent in pence is given; while on the right-hand column is the starch equivalent value of various foodstuffs. Each scale is constructed and graduated logarithmically. The method of use is to join by a straight-edge the price per ton with the S.E. value. Where this line cuts the middle column the price per pound of S.E. is read off in pence.

The use of the nomogram will make calculation of the price of one pound S.E. an easy and rapid matter, and since it can accommodate a great range of variations in price, whether these be local or central, it should prove exceedingly useful for those who have to make rapid calculations of food values.

As has been already pointed out by numerous writers, the authors state that the usual British methods of evaluating an animal foodstuff by means of its starch and protein, equivalent values, is open to grave objection. This method takes no cognisance of the immensely different biological values of proteins of different origin, *i.e.*, cereal as against legume protein, or vegetable as against animal protein. The authors, therefore, propose to assess the foods which possess rich protein values upon a different basis.

Most farmers who employ modern methods of rationing are quite familiar with the use of protein and starch equivalents, and their particular concern now is not so much how to balance a ration as regards protein and starch, etc., but rather how to feed efficiently and adequately at the minimum cost. Further, it is usually difficult or impossible for a farmer to utilise home-grown foods only and yet achieve a sufficiently narrow ratio between protein and starch for the rapid production of milk, eggs and meat. For example, most of the home-grown foods have a wide ratio: the bulky foods (hay and roots) have a ratio of between 18 to 1 and 20 to 1; the cereals have one of about 9 to 1; while milling offals are usually not less than 5 to 1 or 4 to 1. A four-gallon cow needs a ratio of about 5·5 to 1, while higher producers may need an even narrower S.E./P.E. ratio. For these high-producing animals supplementary artificial feeding-stuffs are essential, since their high protein equivalents serve to narrow the S.E./P.E. ratio of the whole ration. It is here that the fundamental error of evaluating the total number of pounds of P.E. in a ration upon the same basis, irrespective of whether these are of high or low biologic value, creeps in. Special emphasis, and special methods for evaluating them, should apply to the "rich" protein foodstuffs. The authors propose the use of the terms "enriching effect" or better "concentrating effect" in connection with the good quality proteins. They illustrate this by a short table as follows:—

	S.E.	P.E.	$\frac{\text{S.E.}}{\text{P.E.}}$	Concentrating Power.
Barley	71	6·0	About 12	Nil
Beans	66	19·7	3·3	Moderate
Dec. Cotton cake	68	34·7	About 2	Good
White Fish meal	59	53·0	1·1	Very Good

A concentration index is suggested. This will vary according to the variation in protein equivalent. They suggest an index value of K × P.E., where K is a constant. Provisionally, a value of 1/9th is suggested for K, and so

$$\textit{Concentration Index} = \frac{\text{P.E.}}{9}$$

The choice of this value for K is based on the fact that the P.E. of cereals and home-grown foods rarely exceeds 9; thus the index for oats would be $\frac{7{\cdot}6}{9}$ which is approximately 1. For other foods, concentration indices are: legumes, 2; "cakes," etc., from 3 to 4; white fish meal, 6; meat meal, 7; and blood meal, 8.

So far as *quality of protein* is concerned, the authors point out that protein is not a chemical entity. It is a group name for a large number of different but related nitrogenous materials. Each foodstuff possesses its own special kinds of protein, some of which are specially valuable to the animal, and some of which are almost or even entirely useless. Each protein is built up of a number of different amino-acids arranged in different proportions (there are about 24 of these so far identified) like different kinds of bricks in a wall, but no two proteins contain the same number of amino-acids, nor these in the same proportions, nor in the same molecular arrangement. Some amino-acids are essential to life and cannot be synthesised from their elements by the animal; they must be supplied "ready-made" so to speak. Some foodstuffs contain in their protein a high proportion of essential to non-essential amino-acids, while some consist entirely of non-essential amino-acids.

Generally, a well-mixed ration will contain all the essential amino-acids, but they may readily not be present in the correct proportions needed by the animal's system. A badly constructed ration, on the other hand, may be deficient in one or more amino-acids, and animals fed upon it will suffer. The analysis of foods for amino-acid contents, and the methods available for determining their biological value and quality are difficult and complicated. Moreover, results obtained by different methods are not always in good agreement. There is urgent need for improvement in technique and simplification.

The facts are, however, that proteins of animal origin are much superior to those from other sources in their "quality" characteristics, and in practical rationing great attention must be paid to them. The authors ask the question: "How then can existing knowledge be best utilised?" It will probably be best to allow them to answer this query themselves, by quoting from their original article. This excerpt is as follows:—

Assumptions must be made for the purpose of simplification:—

(1) Protein Equivalent of cereals should be allotted no value in estimating real costs. In other words, the protein of cereals should be "taken in" at the price of Starch Equivalent because in broad terms such protein, like that of most home-grown foodstuffs, is useful almost exclusively for the maintenance side of a ration.

(2) In virtue of the fact that protein-rich foods are bought mainly for protein, the comparison of different products is best made as follows:—

(*a*) Allot to non-protein starch equivalent (*i.e.*, S.E. minus P.E.) the value it would possess if it were cereal starch equivalent.

(*b*) Subtract this value from the total price and calculate the cost per pound protein.

(3) Since "quality" of protein depends (*a*) on the purpose in view and (*b*) on the composition of the rest of the dietary protein, *i.e.*, that automatically consumed as inseparable from hay, roots and cereals, no generally valid scale of quality is possible. It would, however, be an advance if first-class animal protein (meat meal, fish meal, fibrinogen meal used sparingly and with discrimination) could be regarded as worth twice as much as the vegetable protein of cakes and legumes (leaving out, of course, the value associated with the concentration effect) (see below).

Provisional Basis of Valuation for Proteins.—Let it be assumed that Starch Equivalent and cereal proteins are *worth* the same, say one penny per pound, or, since prices fluctuate, four value points, and let extra points be allotted for concentrating power and for quality.

Example:—

	Protein Equivalent.	Concentration Index.	Quality Points.	Total Points.	4 Points 1d.
					d.
Cereals	7–9	1	0	4 = 4	1
Legumes	18–20	18/9 = 2	0	4 + 2 = 6	1·5
Dec. Groundnut Cake ...	41·3	41·3/9 = 4·5	0	4 + 4·5 = 8·5	2·125
Dec. Cottonseed Cake ...	34·7	34·7/9 = 3·7	0	4 + 3·7 = 7·7	1·925
White Fish Meal	53	53/9 = 6	4	4 + 6 + 4 = 14	3·5
Fibrinogen Meal	76	76/9 = 8	4	4 + 8 + 4 = 16	4

The actual method for ascertaining comparative costs recommended by the authors, necessitates the use of the nomogram (to which reference has been made). Consequently, it will not be given here. The procedure, however, is basically as follows:—

Determine the prices at which high and low protein foodstuffs can be purchased, making due allowance for manurial values, non-protein starch equivalent costs (by deducting P.E. from S.E.), and determining costs of one pound of S.E. and one pound of P.E. Then determine the relative usefulness of the protein, by means of the concentration index $\frac{\text{P.E.}}{9}$ and allot the necessary points to the high-quality proteins. Subsequently, divide the cost of one pound of

protein by the total number of points allocated to the food, and so obtain the price per "point." In special cases, *e.g.*, for milk-production rations, the quality factor is really largely concerned with the amount of the amino-acid *lysine* in the food, and a special scale of points could be devised to suit foods which are particularly rich in lysine. Such "quality points" should only, however, be allotted to foods which are known to be rich in this respect.

It is suggested that not all farmers who practise modern rationing will need to employ this method, but it is suggested that those who deal in large amounts of food may find it useful to employ the method to analyse their costs with a greater degree of precision.

In Parliament

Milk Industry Bill Postponed

In the course of a statement regarding the business to be taken in the House of Commons during the week ending December 10th, the Prime Minister said: "In view of the objections which have been raised in many quarters the second reading of the Milk Industry Bill will be postponed pending further discussion and re-examination of the whole milk problem."

The Cancer Bill

On Wednesday of last week Mr. Elliot, Minister of Health, introduced the Cancer Bill, to make further provision for the treatment of cancer; to authorise the Minister of Health to lend money to the National Radium Trust, and to prohibit certain advertisements relating to cancer.

[After long discussions with the local authorities the Government have decided to place on county and county borough councils, either singly or in regional groups, the duty of securing adequate facilities for the diagnosis and treatment of persons suffering, or suspected to be suffering, from cancer. It is estimated that at present only one case in four which might hopefully be treated by modern methods is so treated. These major local authorities will be required to submit their arrangements for the Minister's approval within a reasonable time. Before doing so they will consult the Radium Commission, and representatives of the voluntary hospitals and the medical practitioners in each locality. It is proposed to have diagnostic centres at which expert clinical advice on a team basis will be available to all. In general these centres will be in the large towns, and patients will come to them from the surrounding areas. Facilities for treatment will be provided in voluntary hospitals, whose services it is hoped to utilise to the utmost, or in hospitals under the control of local authorities. The Government intend to bring the most modern methods of treatment, whether by surgery, radium, or deep X-rays—alone or in combination—within the reach of every sufferer.

This will mean the provision of additional facilities for treatment at appropriate local centres, both by developing existing centres and providing new ones; the provision of additional hospital beds; and arrangements for enabling the local authorities to pay, where necessary, the expenses of persons who have to go a distance for treatment. To meet the needs of persons who may hesitate to make journeys alone for such a purpose provision will also be made for paying the travelling expenses of a companion of the patient. Local authorities will also make such other arrangements as are necessary for the effective operation of the service. Such arrangements will include the pathological examination and the following-up of cases. In this way it is hoped soon to gain much valuable information about the most effective methods of treatment.

It is estimated that when the service is in full operation the total additional expenditure will amount to about £600,000 a year for England and Wales and £100,000 for Scotland. In meeting this expenditure local authorities will be assisted by Exchequer grants which will be approximately equivalent to 50 per cent. of the additional cost incurred. But the grant will be made according to the "weighted population" formula, and the 50 per cent. will be scaled up or down according to the needs of the area. In some of the poorest areas the Exchequer grant will amount to 80 per cent. It will probably take four or five years before the cost of the service reaches £700,000 a year. At first there may be some scarcity of the skilled workers needed.

The Bill enables the Minister to lend up to £500,000 to the National Radium Trust for the purchase of radium and other radio-active substances and of equipment for radio-therapeutic treatment. The Trust has already arranged an option for a substantial purchase of radium from Canada at a fixed price over the next five years. This was arranged before the Government's new scheme was made known and the option has been arranged at about the prevailing commercial price. This option, however, does not exhaust the grant available, and it will no doubt be possible to invite tenders for supplies of radium and radio-active substances from other sources.

An important provision of the Bill is one that proposes a general prohibition of the dissemination of advertisements for "cancer cures" to the lay public. This follows the analogy of a similar provision relating to advertisements of substances for the treatment of venereal disease, which has been in force for many years. The clause dealing with this prohibits advertisements of offers to treat cancer and advertisements referring to articles in terms calculated to lead to the use of articles in the treatment of cancer. There is an exception in respect of advertisements sent to members of the medical, nursing, and pharmaceutical professions and certain businesses, or published in journals of a technical character.

The Bill deals primarily with the diagnosis and treatment of cancer, but the continuance and extension of research is regarded by the Minister of Health as a matter of the highest importance. Valuable work is being carried out by the Medical Research Council, under the control of the Lord President of the Council, with whom the Minister is in close touch. The Minister has already assured the great voluntary organisations of his desire that their work should be maintained and expanded, and of his intention to consult and co-operate with them at every stage.]

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Performing Animals (Regulation) (Amendment) Bill

Lord Charnwood's Bill to amend the Performing Animals (Regulation) Act, 1925, was presented in the House of Lords on Thursday of last week. The Bill makes it illegal to exhibit or train as performing animals chimpanzees

and all anthropoid apes, lions, tigers, leopards, panthers, pumas, hyenas, cheetahs, and bears.

The Bill does not apply to the Zoological Society of London, or to any other society or association which has for its principal object the exhibition of animals for educational or scientific purposes.

On conviction, it is proposed, a trainer would be liable to a fine not exceeding £3 for the first offence and not exceeding £10 for a second or further offence. An exhibitor or an exhibitor-trainer would be liable to a fine not exceeding £5 for each day on which an animal was exhibited by him in violation of the Act. The Court may, in addition to or in lieu of imposing a fine, order that the convicted person's name should be removed from the register, and that such person should either permanently or for such time as might be specified, be disqualified from being registered under the Performing Animals Act.

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The following are among the questions and answers recently recorded in the House of Commons.

Milk and Poultry Legislation

Mr. Morgan asked the Minister of Agriculture whether the delay in proceeding with the Milk Industry Bill will affect the introduction of the promised legislation for the poultry industry?

Mr. Morrison: No, Sir.

Mr. Morgan: As we understand that the setting up of a Poultry Commission is included in the proposed legislation, will the Minister kindly undertake to consult the interests concerned, in a way that was not done in the case of the unfortunate Milk Bill, before the drafting stages are reached in connection with this Measure?

Mr. Morrison: Yes, Sir, all interests have been consulted with regard to the Poultry Industry Bill, and were consulted in the case of the other Bill.

Mr. Alexander: May I ask on that whether the Milk Industry Bill is now dead or in a state of suspended animation?

Mr. Morrison: The position remains exactly as was stated by my right hon. Friend the Prime Minister on Thursday last. [See p. 1713—*Editor.*]

Mr. W. Roberts: May we have an assurance that the postponement of the Milk Bill will make no difference to the financial arrangements for promoting quality milk schemes which are already in existence?

Mr. Morrison: The whole question will have to be reconsidered, and if the hon. Member wants information on that point perhaps he will put down a question at some later date.

Mr. T. Williams: As the Milk Marketing Board have been invited to increase premiums for high-grade milk from November 1st, can the right hon. Gentleman give any guarantee that future legislation will recompense the Milk Marketing Board?

[No answer was given.]

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Grey Squirrels (Destruction)

Captain Conant asked the Minister of Agriculture whether, in view of the widespread damage caused by grey squirrels and their rapid increase in many parts of the country, he would take steps similar to those taken to deal with musk rats in order that they may be exterminated.

Mr. W. S. Morrison: My hon. and gallant Friend will recollect that at the time when the Grey Squirrels (Prohibition of Importation and Keeping) Order was before the House in 1937, an indication was given that it was not then the intention of the Ministry itself to undertake the destruction of grey squirrels as was done in the case of musk rats under the Destructive Imported Animals Act, 1932, but to rely on voluntary agencies as the best means of dealing with this pest. In order that the position may be reviewed, I have recently asked county councils and county borough councils for information regarding the extent of the infestation of lands within their areas, and as to the measures that are being taken by occupiers of land to destroy this animal.

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Chemical Warfare (Experiments on Animals)

Mr. Groves asked the Secretary of State for War how many experiments have been performed on animals at the Porton Research Establishment and Physiological Laboratory, Cambridge, under the Chemical Warfare Medical Committee; how many animals were killed as a result during the years 1935 to 1937; and the type of animals used?

Mr. Hore-Belisha: The numbers of experiments carried out on living animals at the Chemical Defence Experimental Station, Porton, during the years 1935, 1936 and 1937, were as follow:

283 during the year 1935.
68 during the year 1936.
256 during the year 1937.

No experiments were performed on animals at the Physiological Laboratory, Cambridge, on behalf of the Chemical Defence Committee, during the years in question.

The following table gives the information asked for in the second and third parts of the question:—

Animals by Species.	Number of experiments on animals.			Animals killed as result of experiments.			Animals painlessly destroyed after experiments.		
	1935.	1936.	1937.	1935.	1936.	1937.	1935.	1936.	1937.
Rabbits	144	46	91	19	3	Nil	125	43	91
Guinea-pigs	46	22	44	6	Nil	3	40	22	41
Mice	80	Nil	41	21	Nil	Nil	59	Nil	41
Rats	12	Nil	45	8	Nil	9	4	Nil	36
Cats	Nil	Nil	4	Nil	Nil	Nil	Nil	Nil	4
Goats	1	Nil	7	Nil	Nil	3	1	Nil	4
Horses	Nil	Nil	18	Nil	Nil	Nil	Nil	Nil	Nil
Mules	Nil	Nil	6	Nil	Nil	Nil	Nil	Nil	Nil

Central Slaughterhouses

Mr. Price asked the Minister of Agriculture whether any decision had been come to by the Livestock Commission on the location of central slaughterhouses in the three experimental areas, as foreshadowed by the Livestock Act, 1937?

Mr. W. S. Morrison: No decision has yet been reached as to the location of the three central slaughterhouses contemplated under the Livestock Industry Act, 1937. With a view to expediting a decision as to the slaughterhouse schemes to be submitted to the appropriate Minister, the Livestock Commission have intimated to local authorities and other bodies, with whom they have been in informal consultation, that specific and detailed arrangements for the design, equipment and management of central slaughterhouses should be submitted to them not later than December 31st, 1938.

Lieut.-Col. Sir Thomas Moore: Is this delay due to opposition from the small slaughterhouse owners?

Mr. Morrison: No, Sir; the delay is due to the fact that a great many facts have had to be ascertained before the Commission is in possession of the necessary information to decide how to reappropriate sites.

Later, Sir R. Glyn asked the Minister whether he is yet in a position to state when work will be commenced on the establishment of three experimental central slaughterhouses; how long it will be before the results of the working of these centres can be a guide as to future policy; and further, in view of the lack of cold storage and freezing facilities throughout the country, whether he will consider calling a meeting of the refrigeration industry to discuss the question of increasing accommodation to deal with the carcases of animals that would, under any emergency slaughter policy, be thrown on the market in large quantities.

Mr. W. S. Morrison: As regards the first part of the question, I would refer my hon. and gallant Friend to the reply given on November 28th to the hon. Member for the Forest of Dean (Mr. Price). It will, I think, be apparent from the terms of that reply that no indication can be given, at the present stage, as to the date when work will be commenced on the building of the three experimental slaughterhouses. As regards the second part of the question, until the three central slaughterhouses have begun operations it would be premature to attempt to estimate what period must elapse before the results of the experiments can be used as a guide to future policy.

With regard to the third part of the question, I would refer my hon. and gallant Friend to the reply given by the President of the Board of Trade to my hon. Friend the Member for Cardiff, East (Mr. Temple Morris) on November 14th, to which I have, at present, nothing further to add.

HORSE INCREASE IN CANADA

We learn from the Canadian Pacific Development and Industrial Department that the horses reported on the farms of Quebec Province as at June 1st numbered 289,400, compared with 279,900 a year previous—an increase of 3·4 per cent., those on the farms of Prince Edward Island 28,900, or 110 more than the same date last year, an increase of 0·3 per cent., and on the farms of Ontario 560,700, compared with 557,900, an increase of 0·5 per cent.

Notes and News

The Editor will be glad to receive items of professional interest for inclusion in these columns.

Diary of Events

Dec. 10th.—Meeting of the North of England Division, N.V.M.A., at Newcastle-on-Tyne, 3 p.m.

Dec. 16th.—Meeting of the Southern Counties Division, N.V.M.A., at Southampton, 3 p.m.

Dec. 16th.—Meeting of the Midland Counties' Division, N.V.M.A., at Birmingham, 2.30 p.m.

Dec. 19th.—Meeting of the Editorial Committee, N.V.M.A., at 36, Gordon Square, W.C.1, 4 p.m.

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PERSONAL

Birth.—Buckner.—On November 26th, at Blythswood Nursing Home, Leigham Court Road, Streatham, to Mrs. Buckner, wife of C. A. Percy Buckner, M.R.C.V.S., a son. Both well.

Marriage.—Lambert Smith—Jakens. November 29th, at Outwell, Norfolk. Harold Lambert Smith, M.R.C.V.S., of Bexhill, to Edith, youngest daughter of Mr. and Mrs. Jakens, of Outwell.

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R.C.V.S. OBITUARY

Drennan, Robert Edward, 7, Langstane Place, and 56, Polmuir Road, Aberdeen. Graduated Edinburgh, December 14th, 1912. Died November 30th, 1938; aged 55 years.

Mr. R. E. Drennan, M.R.C.V.S.

We record with much regret the death of Mr. Robert Edward Drennan, M.R.C.V.S., which occurred in a nursing home following an illness of three weeks' duration. Mr. Drennan, who is spoken of by the *Aberdeen Press* as one of the city's best-known professional men, was the son of the late Mr. Robert Drennan, farmer, South Sanquhar, Ayr. He is a brother of Professor Drennan, of the Chair of Anatomy at Cape Town University.

After graduating at the Royal Dick Veterinary College, Edinburgh, Mr. Drennan in 1912 went to Aberdeen as assistant to the late Mr. William Morrison, veterinary surgeon, in Langstane Place. Three years later Mr. Drennan acquired the practice, and during the past 23 years has built up an extensive and flourishing business which extended not only throughout the city and county of Aberdeen, but also to many parts of Kincardine.

"Few men were better known to agriculturists in Aberdeenshire and the Mearns, and his professional labours were highly appreciated," says the *Press*. "Not only for his skill in doctoring animals of all kinds was Mr. Drennan well known and admired. He had a cheery, attractive personality that made him popular wherever he went, and by his death his clientele have not only lost a skilful veterinary surgeon, but a sincere friend."

Mr. Drennan is survived by Mrs. Drennan and two sons.

The funeral from Ferryhill North Church to Springbank Cemetery, Aberdeen, took place on Saturday last, when there was a very large and representative gathering, including 15 members of the veterinary profession.

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MAYBIN, John Alexander, Government Veterinary Officer, Omaruru, South-West Africa. Graduated Dublin, July 24th, 1924. Died November 18th, 1938.

MR. J. A. MAYBIN, M.R.C.V.S.

Soon after graduating Mr. Maybin joined the Veterinary Division of the mandated territory of South-West Africa, and served in various parts of the Colony.

He soon proved to be a most capable officer endowed with a genial disposition and great tact and was an inveterate optimist to the end. Maybin was accordingly held in high esteem by both his colleagues and the farmers with whom he came into contact.

During the last week of October he attended the annual congress of the South African Veterinary Medical Association and while there was taken suddenly ill, which necessitated his removal to hospital where he passed away three weeks later at the age of 53 years.

The funeral took place at the New Cemetery, Pretoria, on November 20th, and the presence of a very large number of colleagues was evidence of the great popularity which he enjoyed. The pall bearers were Drs. P. J. du Toit (Director of Veterinary Services), E. M. Robinson (Sub-Director of Veterinary Services), Messrs. A. McNae (late Senior Veterinary Officer, South-West Africa), C. J. van Heerden (Vice-President, S.A.V.M.A.), S. W. J. van Rensburg (Secretary, S.A.V.M.A.), and W. F. Averre (representing the lay staff, Veterinary Division).

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MILLER, John. Invercargill, New Zealand. Graduated Edinburgh, December 21st, 1894. Died November, 1938.

MR. JOHN MILLER, M.R.C.V.S.

MAYOR OF NEW ZEALAND TOWNSHIP

News has been received in Blairgowrie of the death of Mr. John Miller, M.R.C.V.S., a former veterinary surgeon in the town who emigrated to New Zealand, where he had a distinguished career of public service. Mr. Miller for a good many years had the practice at Erichtbank, Blairgowrie, now carried on by Mr. William Nairn.

Educated at the Royal (Dick) Veterinary College, Edinburgh, Mr. Miller left Blairgowrie for New Zealand in 1911 to act as a Government veterinarian at Invercargill, and later he entered upon private practice. Mr. Miller was elected to Invercargill Borough Council in 1919 and, with a two years' break, continued to be a member until his death. For ten years he was mayor of the town, of which he was the first civic chief to be in office at the time of his death. He stood for the New Zealand Parliament as a National candidate at the last election, but was unsuccessful.

Mr. Miller took a prominent part in numerous public bodies in Invercargill and Southland Province. For three terms he had been president of the Southland Progress League. He inaugurated and was first president of the Southland Children's Health Camp Association, was patron of the Crippled Children's Association, and was associated, mostly in a presidential capacity, with the Southland Hospital Board, the Southland High Schools Board of Governors, the Southland Museum Board, the South Islands Travel Association, the Municipal Electrical Supply Authorities Association of New Zealand, the Southland Executive Committee of the Centennial Memorial, and the Southland Exhibition Court Committee. He was also chieftain of the St. Andrew's Scottish Society. In 1929 he was elected as president of the Municipal Association of New Zealand.

Mr. Miller is survived by his widow, four sons, and two daughters. Mrs. Miller is a daughter of the late Mr. Thomas Saunders, Union Bank agent, Coupar Angus.

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LEGAL NOTES

Cruel "Unqualified" Treatment of a Dog.—A charge of cruelly ill treating a dog at Selsey on May 17th and 18th was preferred against Percy Williams, 58, an unqualified animal practitioner, late of Selsey and now of Sunnybrae, Roman Way, Glastonbury, before the Chichester County Magistrates recently.

Mr. Gordon Jones, prosecuting on behalf of the R.S.P.C.A., said that the case had been twice adjourned, a fact that the Justices were asked to take into consideration if convicting. Williams was without qualifications and was what was generally termed a "quack." A Mrs. Jones called him in to help her spaniel bitch with whelping. One dead and one live pup had been delivered before he arrived, and during three visits he used instruments to take away a third pup. A veterinary surgeon was called in on the third day, who found the organs had been extensively lacerated in a way that must have caused "tremendous suffering." It was alleged that the suffering was caused by unskilled operations which would have been unnecessary to a competent practitioner.

Mr. W. R. Hill, M.R.C.V.S., of Arundel, said Mrs. Jones took the bitch to his surgery on May 19th. It was in a state of collapse and likely to die at any moment; the only thing to do was to destroy the dog. He described the internal lacerations caused, in his view, by the use of instruments; in his opinion, the injuries would not have been caused by a qualified practitioner. The use of instruments should not have been necessary, but if used, they should have been manipulated more skilfully.

Inspector Victor Brown, R.S.P.C.A., said he interviewed Williams on May 25th, when he said the dog was not mutilated or hurt in any way by him.

Williams, in evidence, said he had handled thousands of dogs for 30 years. The only instruments he used would make it impossible to tear the flesh. He produced a number of letters which had been sent to the Court, testifying to his love of animals. He had treated numerous animals in Selsey without payment and in this particular case no fees were paid.

In cross-examination, Williams said he went to Selsey three-and-a-half years ago because he was ill, and although he did not practice as a veterinary surgeon, people got to know he attended dogs and took their own to him for treatment.

The Bench convicted. The Chairman said there was no intention of cruelty, though in fact

cruelty was committed. Williams was fined £2 and £2 2s. costs.

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Non-Attested for Attested: Heavy Penalties.—Allegations that a non-attested animal had been substituted for an attested one in a sale of attested cattle at Market Bosworth, Leicestershire, were made at a special sitting of the Market Bosworth magistrates.

George James Watson, who formely farmed at the Hall Farm, Market Bosworth, pleaded "not guilty" to a charge that on May 25th, at Market Bosworth, he did with intent to defraud obtain the sum of £25 4s. from Messrs. John Done & Son, Malpas, by falsely pretending in a catalogue of sale that a roan heifer sold by auction to Messrs. Done & Son was an animal which had been tested so as to comply with the provisions of the Tuberculosis (Attested Herds) Scheme, 1937. Defendant also pleaded "not guilty" to eight charges of obtaining sums of money from the Minister of Agriculture by false pretence.

The prosecution alleged that Mr. Watson's herd became attested in January, when 58 animals passed the test. Defendant sold one animal and on March 11th he purchased a roan heifer from a Mr. Hands and included it in the herd. This animal was not isolated. At Mr. Watson's sale in May it was purchased by Messrs. Jone Done & Son for 24 guineas. Messrs. Done & Son made the purchase believing that the animal was attested. When the animal was taken to Malpas and tested by a Ministry official it was found to be a reactor and had to be sold for £15. Subsequently defendant admitted it was a substituted animal.

The prosecution also alleged that defendant had not filled in forms in regard to the movement of cattle and contended that Mr. Watson had purchased five calves and that he had included them in his sale as home-bred.

Evidence was called to show that Mr. Watson had also sold three beasts at a local auction. His birth record from January to March showed that twelve heifer calves were born into the herd, but a former employee stated that there was only one birth.

For the defence it was admitted that defendant had substituted one heifer, but it was claimed that immediately it was purchased it was isolated and that the day after purchase Mr. Watson called his own veterinary surgeon to inspect it and a further inspection was carried out two months later. These inspections showed that the heifer was free from tuberculosis.

Regarding the calves, Mr. Watson said that these were isolated and at his sale were not sold as attested cattle. He had asked the previous owner not to disclose that he had bought them because he did not want people to know what he had paid for them. In regard to the three cows sold at a local auction, Mr. Watson said that these animals had never been on his attested farm, but were kept on another farm.

Defendant was fined £40 and costs on the first charge or six months' imprisonment, and £10 and costs on the other eight charges or one month's imprisonment, and he was also ordered to pay the costs, which amounted to over £40.

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A Gloucester butcher has been fined £5 and informed that he was liable to a fine of £100 for contravening regulations by using a slaughterhouse for the slaughter of a sheep not intended for human consumption.

SOUTHAMPTON'S NEW CLINIC

Southampton's new clinic for the sick and injured animals of the poor, at 90, Northam Road, was opened recently by the Countess of Shaftesbury and the Mayor (Councillor A. H. Powdrill).

Mr. G. N. Gould, M.R.C.V.S., represented Mr. Brennan DeVine, M.C., F.R.C.V.S., President of the National Veterinary Medical Association, at the ceremony.

Official guests then inspected the well-equipped clinic, which has been established and will be maintained by the Southampton and District Branch of the R.S.P.C.A.

Addressing a meeting of the Southampton and District Branch of the R.S.P.C.A., which followed, Dr. E. H. M. Stancomb, the Chairman of the branch, who presided, said that the opening of the clinic marked an important epoch in the local history of the Society. The Society had worked in Southampton for many years, and the clinic which had been opened that afternoon was for the free treatment of animals belonging to people who were unable to pay a veterinary surgeon's fees. It could not be maintained without generous support from the public.

Dr. Stancomb added that but for the generous co-operation of the veterinary surgeons of the town, it would not have been possible to establish the new clinic.

Mr. G. N. Gould said he wanted to make it clear that this was not the first time treatment had been given to the animals of poor people in Southampton free of charge. He did not know a single veterinary surgeon who did not give free treatment to animals whose owners were unable to pay fees. At the clinic, the veterinary surgeons of the town would continue to give their services free, but they were asking the public to meet the incidental expenses of treatment.

Co-operation between the R.S.P.C.A. and the National Veterinary Medical Association had made the clinic possible. The clinic was going to be run on the best possible lines, and the best and most modern treatment would be given.

Mr. Gould hoped that it would be a place where people would not only bring their animals for treatment, but where they would come for advice on the prevention of disease and the maintenance of health. Many people who would hesitate to ask a private practitioner to treat their animals without fee, would feel less diffident about bringing them to a clinic, and in this way a lot of unnecessary suffering would be prevented. "The clinic," concluded Mr. Gould, "will, I am certain, never fail through lack of support from members of the veterinary profession."

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THE STATE AND MEDICAL RESEARCH

The following critique (appearing recently in *Nature*) upon Sir Edward Mellanby's Harveian Oration, delivered before the Royal College of Physicians, deserves most careful attention on the part of all who are now concerned with the vexed question of the relationship between the State and veterinary activities, whether in the matter of education or research. We feel in particular that the remarks made by our distinguished scientific contemporary upon the grave dangers contingent upon State endowment, through the trammels of bureaucracy, need to be taken very carefully into consideration in relation to veterinary education.

"In the Harveian Oration, delivered by Sir Edward Mellanby before the Royal College of Physicians on October 18th, and summarised in *Nature* of October 29th, certain points were raised of such importance, particularly at the present time, that it seems desirable to underline and amplify them.

"A realisation of the urgent need for medical research makes no call on the imagination, and demands no special medical knowledge. We have all seen pain, disease and death at close enough quarters to wish that we were better armed against them; and it is evident that the only effective arms we can hope for are those fashioned for us by science.

"What is not so fully realised, at least by the general public, is that the case for extended research is stronger than ever before, because the prospects are brighter. As always in the growth of science, each new discovery brings other discoveries a little nearer, so that the potential rate of advance continuously increases. It would not have been easy, 50 years ago, to indicate how large sums of money could best be spent to hasten our acquirement of the knowledge that alone will enable us to control disease. It is certainly true to-day that our rate of advance is mainly determined by finance. We can spend, to advantage, more than there is any likelihood of our obtaining; and the date at which mankind will be freed from the dread of such killing or disabling diseases as cancer, tuberculosis and rheumatism depends, in the main, on how much we are prepared to pay. This does not mean that a frontal attack is necessarily the best or the speediest method of gaining the knowledge that we require. The sure road to success is to stimulate the growth and development of the medical sciences as a whole. Lister followed Pasteur; aseptic surgery was the outcome of studies on fermentation. We cannot tell where we shall find the key to any of the more obstinate puzzle-locks of medicine.

"It is only by adequate and wise endowment that such a growth of the medical sciences can be secured. The return such endowment would give us may reasonably be assessed in the light of our gains in the past. To take only recent advances, diabetes and pernicious anaemia, incurable and fatal diseases not many years ago, are now readily controllable. We can, if we choose, eliminate diphtheria as an important infection of childhood. We are at last in sight of an effective attack on influenza, one of the major killing diseases of adult life. The discovery of the therapeutic action of sulphanilamide, and its related compounds, has not only given us our first effective weapon against puerperal septicaemia, the main cause of maternal mortality, but also has brought bacterial infections in general into the field of chemotherapy, which hitherto seemed to be limited to protozoal diseases.

The funds required to maintain a healthy activity throughout the whole research field involved, and to concentrate additional resources at any point which promises a rapid advance, are large—large at least in terms of the inadequate resources that have been available in the past, though trivial in comparison with the sums expended on health administration that is often ineffective because it lacks the necessary knowledge on which to act. Some part of the money required may be provided by the munificence of private donors, or by public subscription. Sir Edward Mellanby instanced some of the funds available for this purpose, such as those administered by the Leverhulme Trustees, the Halley Stewart Trustees, and the British Empire Cancer Campaign. There is an expectation of additional support from the Wellcome Trustees; and British medical research already owes much to the generosity of the Rockefeller Foundation of America—a generosity which, as Sir Edward emphasised, might well prick the conscience of some of our own countrymen. It is reasonable to expect more help from industry in the future than we have received in the past, particularly in the rapidly expanding field of chemotherapy; and it is perhaps not too much to hope that our large life insurance companies, which benefit directly from the increased expectation of life consequent on the increase of medical knowledge, may one day be stimulated by the admirable example set by similar bodies in the United States. But, whatever help is available from such sources as these, it is inevitable that the greater part of the burden should be carried by the State, for the State bears the ultimate responsibility for national health and for financing the measures that are necessary to secure it. It is in relation to the form in which State endowment can best be supplied and utilised that Sir Edward Mellanby's account of the working of the Medical Research Council is of particular interest.

"Bureaucracy, giving the term its common and well-justified implication, is the inveterate enemy of research. State endowment means State control; and if 'State' and 'bureaucratic' were synonymous terms the outlook would be dark. But the Medical Research Council, under the wise guidance of its two secretaries, the late Sir Walter Fletcher and now Sir Edward Mellanby, has shown that bureaucracy is a malignant growth that a Government department can quite easily prevent by a simple willingness to delegate, not final authority, but provisional decisions, and the carrying out of plans that have been approved. Incidentally, the Council has also shown that bureaucracy is as expensive as it is obstructive, and that its elimination leads to a great saving of public funds. Working through a large number of unpaid expert committees, the Council has encouraged those who know how research can best be stimulated and assessed to do these things for nothing. As a result, the Council's administrative expenses are a very small fraction of the total funds at its disposal, and the greater part of its financial resources are expended on the salaries of research workers, or on the laboratory expenses associated with their work.

"Moreover, by enlisting the voluntary help of a large number of senior workers in universities, research institutes and hospitals, the Council has been able to co-ordinate investigations in a way which no other body could approach, and to ensure, so far as is humanly possible, that economy is safeguarded by terminating lines of research that have served their purpose, or have failed to fulfil their promise, and by concentrating the available resources in the most promising fields. Its ability to do this, it should be noted, is largely due to the fact that it acts on the advice of those who know what is actually happening, and, as a result, has won their trust and willing co-operation. It does not seem impossible that a method which has proved so successful in one branch of Government activity might be equally effective in others. We are an empirical people, and learn more readily from experience than from argument.

"One other point that was stressed by Sir Edward Mellanby deserves further amplification—the unnecessary lag that is apt to occur between the discovery of a method that is applicable to the diagnosis, cure or prevention of human disease and its adequate practical exploitation. This lag is far less conspicuous on the curative than on the preventive side. A new therapeutic agent tends to be tried out at once, and on a wide scale. The trouble is that the trial is often uncritical and uncontrolled, and that the factors that determine the use, or abuse, of the new remedy take longer than they need to win general recognition. The Medical Research Council has made a start towards removing this defect by setting up a Therapeutic Trials Committee.

"It is on the preventive side, and particularly in relation to the application of new methods of preventing infective disease, that the lag is longest, and the position in Great Britain is most discreditable, perhaps because this field of activity, on its applied side, has not hitherto been regarded as falling within the Council's sphere. It is not flattering to our sense, humanity or self-respect that we have no central or regional institutes of hygiene, or State laboratories, comparable to those that have been established in the great majority of other civilised countries. The United States, in addition to the National Institute of Health at Washington, has numerous State institutes such as the Division of Laboratories and Research of the New York State Department of Health. Germany has the Reichsgesundheitsamte in Berlin; Denmark, the State Serum Institute in Copenhagen; Italy, the Institute of Public Health in Rome; Poland, the Institute of Hygiene at Warsaw; Hungary, the Institute of Hygiene at Budapest; Turkey, at Ankara; Czechoslovakia, at Prague; Rumania, at Bucharest, Jassy and Cluz; Yugoslavia, at Belgrade and Zagreb; and so on.

"All these institutes, though varying in their detailed functions, and in their exact relation to the State, serve as national or provincial centres which stimulate the scientific attack on infective disease, aid in the practical application of new discoveries to preventive problems, and provide, for public health administrators, facilities that they could obtain in no other way.

"Other parts of the British Commonwealth are, in this matter, well ahead of Great Britain, as is shown, for example, by the admirable work carried out by the Connaught Laboratories in Toronto. Our neglect of this obvious deficiency is humiliating, and not without its dangers to health even in ordinary times. In times of emergency it may, unless remedied, entail improvisations that, with all their attendant difficulties and disadvantages, would be unnecessary if our peace-time organisation were less defective.

"In many ways the practice of medicine in Great Britain is as good as anywhere in the world. British public health legislation and practice have a proud history since the days of Chadwick and Simon. Our universities and our institutes of medical research have made outstanding contributions to knowledge, and are fully capable of adding to them. Our future position in the world of medical science which, in addition to its national importance, plays no small part in international relationships and co-operation, will depend mainly on the willingness of the Government to provide the necessary funds, and on the extension to wider fields of the wise methods by which the Medical Research Council has encouraged integration, while allowing freedom and initiative, within the territory it has covered in the past. In particular, there must be a clearer recognition of the interdependence of research and practice. A problem in the prevention or cure of disease has not been solved until a finding reached in the laboratory has been tested and applied in the ward, or in the field, and has been exploited to the limits of its usefulness. The method of approach that will succeed in the earlier stages will succeed in the later, and other methods will fail. The bureaucratic method is as incapable of applying discoveries effectively as it is of making them. State endowment and encouragement of those who alone can do the work required will yield the results we need, and yield them at the minimum cost."

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AGRICULTURE AND THE NATION

Addressing the Farmers' Club, on Monday night, on "Agriculture's Place in our National Economy," Colonel Sir Reginald Dorman-Smith, M.P., said he was satisfied that neither the Prime Minister nor the Minister of Agriculture had the slightest desire to shirk his responsibilities. Experience had shown that this Government desired to give to farmers as square a deal as possible, but they were not clear as to the ultimate aim of the Government's agrarian policy. If an agricultural policy was to prove successful the country's intentions must be much clearer than they were to-day.

The townsman in every country within the British Commonwealth of Nations—and, indeed, in nearly every part of the world—had in his hands the political and the financial power. The townsman determined the cost of the goods which he supplied; if the farmer on his part could not obtain from the townsman a fair price for his products trade between town and country would dry up, as it was now drying up, more to the detriment of the townsman than the countryman.

The state of the world to-day demanded a definite lead from this country and from the British people oversea. That could not be given if we were losing our vitality and our fertility. Given reasonable conditions, the number engaged in agriculture could be increased by at least 1,000,000 people. Considering that during the last 80 years the number had decreased by 2,000,000, the claim was not unreasonable. Something like 70 per cent. or 80 per cent. of the world's population were engaged in agriculture; on their prosperity must depend the health, both material and physical, of the 20 per cent. who were engaged in industry. Throughout the Empire the balance between town and country had become so maladjusted that farming was everywhere a subsidised industry; in every British country there was an ominous drift from the land. If the existing situation continued he had no hesitation in predicting "an almighty economic crash."

"We argue," Sir Reginald Dorman-Smith said, "that agriculture could and should provide industry with a vast 'new market.' We believe that we are capable of increasing our output, and with it our purchasing power, by at least £100,000,000 per annum. We are convinced that our requirements of capital goods for the reconditioning of our land, buildings, and machinery would provide a tremendous amount of urban employment."

They were anxious, he added, to assist in the formulation of an agricultural policy which would not be upset by such accidents as a change in Government and which would enable them to achieve the highest degree of efficiency. They desired that policy to see the light of day while they still had some voice in their own affairs. But he failed to see how they would arrive at such a programme until the Government had decided on the rôle which they desired our rural community to play in our national economy. He was unable to persuade himself that this country had any clear idea as to the proper function to be performed by agriculture. Therefore he was forced to the conclusion—purely a personal view—that, if any finality was to be brought to the battle which they were waging on behalf of the agricultural community, they must ask for the setting up of a Royal Commission to advise the country on what, in their own interests, should be the "rightful place of Agriculture in the National Economy."

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Terling Graceful 10th, a British Friesian cow bred and owned by Lord Rayleigh's Farms, Essex, is the 24th cow of her breed to yield upwards of 3,000 gallons of milk in not more than 365 days. Her production, since calving in February last, is 3,001 gallons in 270 days, and her daily output is still ten gallons Born in May, 1931, she has calved five times and has produced in all 9,970 gallons of milk. Her four previous yields, all in lactation periods of less than 365 days, were 1,078, 1,949, 1,727 and 2,213 gallons.

Correspondence

Letters to the Editor should reach the Office not later than by the first post on Tuesday morning for insertion in following Saturday's issue.

All correspondence must bear the name and address of the contributor for publication.

The views expressed in letters addressed to the Editor represent the personal view of the writer only and must not be taken as expressing the opinion or having received the approval of the N.V.M.A.

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THE LOVEDAY REPORT

To the Editor of the Veterinary Record

Sir,—As soon as the Report was published, I obtained a copy and have read it with interest. I cannot claim to have made a detailed comparative study of it, but I gained the impression that it was very sound in theory, and that, in the main, the recommendations of the Committee were very welcome to my way of thinking. Consequently, I was astonished to see the letter published in the *Veterinary Record* of November 19th from Dr. A. W. Whitehouse. One must assume that as the Principal of a veterinary college, he must have considerable ability as an educationist, whereas I can claim none, but as a veterinary practitioner with a fairly good memory of my own college career and in fairly constant association with students and recent graduates during the last 18 years, I feel convinced that the recommendations of the Committee would be of enormous value to the improvement of our profession. As Dr. Whitehouse thinks that there is so very little in the Report which is worthy of support, I feel constrained to call attention to a number of points which I have marked as being particularly acceptable. Taking them in the order in which they appear in the Report:—

1. *Paragraph* 9: "Proper facilities for clinical training and for the practical side of animal husbandry are everywhere lacking."

2. *Paragraph* 15: "If the veterinarian enters the public service . . . the actual treatment of individual animals will be seldom required but his work will demand administrative capacity"—and I would add practical knowledge of the handling of animals.

3. *Paragraph* 18: "Some restriction of the activities of unqualified practitioners may be decreed, and this would increase the openings for qualified persons."

4. *Paragraph* 24: "The organisation of the Council of the R.C.V.S. does not specifically provide for the representation of the Schools on the Council and Examination Committee, and there is, therefore, a danger that the Council may lack skilled guidance in the development of veterinary education."

5. *Paragraph* 30: "We are not of the opinion, however, that a multi-portal system of entry into the profession will be to its advantage. . . . The scheme we have recommended . . . eliminates many of the disadvantages associated with the present system whilst retaining its uni-portal character."

6. *Paragraph* 33: "The facilities for the study of animal husbandry in the Schools are either inadequate or altogether absent, and the teaching is too theoretical."

7. *Paragraph* 34: I would commend the whole of this paragraph but refrain from utilising your space for repetition. It stresses the importance of a constant and sufficient supply of clinical material at the Schools, and in view of the comparison made here and in the appendices, between the Schools at Berne and Utrecht on the one hand, and London and Liverpool on the other, it is difficult to understand how Dr. Whitehouse can come to the conclusion that the British system of instruction is as good as it can be, and that ours is the best organised and trained veterinary profession in the world.

8. *Paragraph* 36: "We emphasise the necessity of the Schools working in co-operation with practitioners . . ." also "with some exceptions, *e.g.*, the animals of poor persons, cases should only be admitted on the recommendation of the veterinary practitioner."

9. *Paragraph* 38: "Instruction in the technique of the many operative procedures can only be given in a properly constructed and equipped hospital. . . . Demonstrations are not sufficient. The student must share in the work so that he will become thoroughly familiar with the technique. . . . We desire to emphasise these matters as we feel that the introduction of the student to clinical experience is a most important stage in his training, and the quality of the final product may well depend on the manner in which the clinical subjects are presented."

In view of the above, I must regard as very sound the Committee's recommendations:—

10. *Paragraph* 40: (i) Six months' pupilage on a farm (*sic*); (ii) a field station for the teaching of animal husbandry; (iii) a hospital for farm animals at each field station; (iv) student to spend not less than six months with a veterinary practitioner.

I am in agreement with the suggestion that certain universities should grant a degree at the end of three years' study, which would exempt the graduate from the first three years

of the M.R.C.V.S. course, provided that it be in no way designated or regarded as a veterinary degree.

The adoption of the recommendations of the Committee must produce graduates with much greater practical experience with the large animals than has been the case for many years. I think that practitioners in general have been greatly disappointed in the obvious lack of practical training in recent graduates—apart from those who are the sons of veterinary surgeons—and the Committee's recommendations would go far towards remedying this deficiency.

Yours faithfully,
T. L. Wright.

183, Upper Richmond Road,
Putney, S.W.15.

November 29th, 1938.

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To the Editor of the Veterinary Record

Sir,—In the absence of the details of their debate it is difficult to comprehend the line of thought which has led the Council of the R.C.V.S. to the conclusions embodied in the report of their recent meeting. Surely there is nothing in the recommendations of the Loveday Report which menaces either the independence of the profession or its control over its own development, provided an honest attempt is made, by the various bodies concerned, to work the Committee's proposals.

In effect, the Loveday Committee recommend that the studies for the first three years shall continue at a standard not below that of the diploma course, but shall be carried out under the auspices of the universities, and that a newly designed degree in science shall be attainable on these studies. This degree will not be based upon one of the present science courses, but is to be modelled upon the same syllabus as that considered to be suitable to those taking the M.R.C.V.S. diploma. This course is to cover the subjects normally taken by the veterinary student and, in my opinion, its acceptance in place of the usual three diploma examinations cannot be to the disadvantage of the profession. The suggestion that the proposed degree is simply an ordinary pass degree which may be taken at any college or department of the university is incompatible with the careful attention the Loveday Committee seem to have devoted to the question of syllabus, or with their recommendations for staffing the present schools for the classes of the first three years. Presumably the Council of the R.C.V.S. believes that this degree, if allowed to exempt from the first three diploma examinations, will react adversely upon the profession. Personally, I took my diploma at a university, but I cannot share this view. It seems to me that the recommended scheme would considerably help the professional man in many ways, both while he is a student and in his later career.

As the President of the R.C.V.S. steadfastly rejected any feeling of inferiority it is even more surprising that the Council objects equally strongly to the recommendation that a few representatives nominated by the educational institutions shall have seats upon this august body. How these ten men, who will be mostly veterinarians, can wrest the control of the duties of the R.C.V.S. from the 36 elected representatives, together with their able Registrar, is difficult to appreciate.

In conclusion, I must add that to me, the reading of the Loveday Report gave a pleasure similar to that experienced upon throwing back the shutters from the windows of a closed room, revealing as it did, the vista of a beautiful landscape of enhanced professional endeavour, which can be gained with comparative ease, if the ruling body of the profession will only remove its gaze from the family portraits which adorn the walls of the delightful room in which it has been closeted for so long.

I am, Sir,
Your obedient servant,
W. Leslie Dwerryhouse.

1, St. Leonards Close,
Bridgnorth,
Salop.

December 3rd, 1938.

. . . . . .

To the Editor of the Veterinary Record

Sir,—In reply to Mr. Ross, I must point out that flat contradiction is an irrational form of argument, and he has produced no reasons in support of his contention, which is apparently that the sons of farmers do make the best veterinary surgeons. I should be interested if Mr. Ross, or any reader, could inform me why this should be so. Since "completing forms" has become so large a part of our professional duties, I should imagine that anyone brought up in the Government Service tradition would have the makings of an excellent veterinary surgeon! My aim was to point out the undesirability of recruiting for our profession from any one class, as surely for liberal thinking and independent action it is essential that we should be drawn from as varied sources as heretofore. I should, therefore, like to know why the proposed scholarships should be made available only to sons of farmers. It appears that the only result of such a policy will be to produce a generation of "Yes-men."

The remark to which Mr. Ross takes particular exception, concerning the sons of ostlers and grooms, is a historical fact, and the reason why we have risen from the lowly position of yesterday has been due entirely to the Royal College of Veterinary Surgeons, and latterly to the N.V.M.A., who, by enabling us to participate in the Animal Health Department of the Ministry of Agriculture, have liberated us from the competition of the quack practitioner and the patent medicine vendor, for which we should be profoundly thankful.

In regard to the proposed period of pupilage on a farm, one feels tempted to ask oneself whether it is not better to commence one's studies with a mind free from the superstitions of a hundred generations of farmers. Is then the cow in health a subject so mysterious and lapped around in hocus pocus that he who can master in a year the intricacies of Veterinary Pathology has yet to turn baffled from its contemplation?

I am, Sir,
Your obedient servant,
S. Ll. Trevor.

Llanover Lodge,
Chepstow, Mon.

December 4th, 1938.

To the Editor of the Veterinary Record

Sir,—It was quite refreshing to me to read the letter of Mr. Llewellyn Bevan in your issue of December 3rd. The thoughts so well expressed by him in the fourth paragraph of his letter will appeal to all fair-minded men.

One wonders how such phrases as "inferiority complex" and "conflict of loyalties" have arisen and been bandied about in recent controversies. Sometimes modesty is mistaken for the former and a budding Labouchère or Talleyrand may be laughing up his sleeve at the antics of those with the "superiority complex." As regards the latter, there ought to be no "conflict of loyalties" between gentlemen of the same profession with the good of the cause at heart and travelling in the same direction.

Why should veterinary education be picked on as so inefficient and university education be so much lauded? There are serious gaps in university education and serious lapses in discipline that need correcting; the percentage of "remittance men" that some of these seats of learning turn out is far too high and yet no outside body of men has any influence in reforming them.

The editorials on the Loveday Report are very interesting and the special pleading quite noticeable, but if they go on much longer one may be reminded of the fable of the centipede when "someone asked him how he contrived to keep count of so many legs, whereupon he became confused and fell into a ditch." Personally, up to the present, I have had some 30 assistants and locums who after leaving me have gone into distant lands and gained important posts with credit to themselves; others have gone into private practice and done well; some have even got good positions with the Ministry of Agriculture; one is on a teaching staff of a college and is highly valued.

With these facts before me I cannot think there is much wrong with veterinary education or at any rate so much wrong as to require the radical overhauling that would appear from the Loveday Report. It is true that the matter of Animal Husbandry is perhaps rather neglected, but does the Ministry of Agriculture give any special indications that its servants should stress the science with regard to the animals they inspect? There are some 30 agricultural colleges and schools in England and Wales all dealing with Animal Husbandry and some seven or eight institutes and schools dealing with research on animal subjects, so that the veterinarian will find many Ruperts in the fields he crosses and may wonder whether any information he may be able to impart may not be a case of what the schoolboy calls "stale news."

The fandango about the lowly origin of our profession seems to me so much nonsense at the present time and to lead nowhere. Such history of drawbacks and setbacks and dark ignorance may be written about the early days of the medical, the legal and the clergyman's profession.

Yours sincerely,
G. Mayall.

Bolton.

. . . . .

To the Editor of the Veterinary Record

Sir,—I read with interest the letter from the Union Society of the Royal Veterinary College in this week's *Record*. I was particularly interested in the Union's time-honoured grouse concerning clinical instruction in farm animals. Veterinary education, even since I started at the R.V.C., has improved and increased enormously even to compulsory pupilage in general practice where one can get ample experience of farm animals.

As I see it, clinical diagnosis is much the same for all classes of animals and is dependent on three primary things:—

1. A power of observation.
2. An ability to ask questions in such a manner as to ensure a truthful answer.
3. A knowledge of the subject in normal health.

The first may be developed by training (Pelmanism, etc.). The second is acquired by constant practice, and it may interest students that the R.V.C. provides an extensive course of Anatomy Physiology and Animal Management to give them an adequate knowledge of the third.

I am, Sir,
Yours faithfully,
N. R. Turnbull.

22, Worting Road,
Basingstoke, Hants.

December 3rd, 1938.

* * * * *

WHOLE-TIME AND PART-TIME OFFICIALS

"All Hands On Deck"

To the Editor of the Veterinary Record

Sir,—I did not read Mr. Hall Masheter's letter on the above subject—one must have great courage and time on hand to grapple with his verbosity—but I gather from Mr. Esmond Brown's reply that he, Mr. Masheter, has a well-developed anxiety complex in regard to his future in particular and that of the rank and file of the profession in general. Is this anxiety justified? I, for one, think not. Generations unborn I believe will look upon the year 1938 as the year of the rebirth of the veterinary profession to greater service and if from now on we grasp our opportunities as we ought we shall become the envy of our sister calling, the medical. Some may retort, this is an heroic prophecy and further, all prophesies are dangerously speculative. My reply to this would be, I have tried to sense the signs and portents of the times and to look facts in the face, basing facts upon the axiom that they—facts—are the materials of science, but all facts involve ideas—since by observing facts one cannot exclude ideas: we must be careful that those facts are rigorously applied.

Well, now, what are the facts—as I see them?

(1) On a large scale "the powers that be" for the first time recognise in the whole veterinary profession a powerful force in the economic fabric of this great nation—*e.g.*, Tuberculosis Orders.

(2) That the losses to this country through specific diseases in our herds are colossal and that the only ladies and men who are capable of eliminating these losses are the whole- and part-time members of our profession working in unison. Tuberculosis has been tackled by the State and its ultimate doom is sealed, but that Utopian stage will not be reached in a millennium night—and in the meantime it will be a case of "all hands on deck."

Then, tuberculosis out of the way, the profession will have no time to rest upon its laurels. That "*bête noir*" specific abortion looms clear on the horizon with its satellite specific mastitis following close upon its trail—another enormous problem requiring all well tried hands on deck. By that time—

perhaps—a decade or more may have passed, and if civilisation by then—as we know it—has not gone into the melting pot there is still much more work ahead for all hands.

(4) In the field of sporadic diseases millions of pounds are lost yearly to this country through mal-management, mal-treatment and empiricism on the part of stock owners. The general practitioner knows, given a normal healthy animal, if he is called in to treat in the initial stage of illness recovery will be assured, while procrastination in the case of the same subject would often spell a fatal issue. To remedy this I would like to see the day arrive when we have a State Veterinary Medical Service, to guide the destinies of the animal population. Here again I can visualise "all hands on deck."

All this is not a fantasy, the figment of an optimistic mind—a dream, unless it is of the kind, "we are such stuff as dreams are made of." I could say much more, but I, too, may be accused of verbosity!! I trust, however, I have brought some little degree of comfort to the pessimist and approbation to the optimist. The latter, I am sure, will agree with me that to man, and captain, the veterinary ship of the future we shall want "all hands on deck."

Truly yours,
W. M. Scott.

P.S.—Since writing this letter I have just read Professor Wright's excellent and informative article on "Patent Medicines." I thank him for it, for it just emphasises the verity of my plea *re* the necessity of a virile State Veterinary Medical Service to protect the stock owner, not because of himself so much as in spite of himself.—W.M.S.

Fryern Hall,
Bridgwater.

* * * * *

TREATMENT OF EQUINE COLIC

To the Editor of the Veterinary Record

Sir,—Controversy at this distance is apt to be boring and unfruitful, but a question of fact arises out of the difference between Mr. Gunning and myself in our discussion of the above matter that ought to be settled because its satisfactory solution would revolutionise the treatment of equine colic. Does there commonly exist, as Mr. Gunning believes and I cannot yet believe, a primary condition of impaction of the small intestine that is a cause, by itself and without displacement or rupture, of fatal colic? And if such a condition commonly exists can it be "cured" in 100 per cent. of instances by the acetylcholine technique of Mr. Gunning?

Mr. Gunning tells us in his original paper (*Veterinary Record,* August 20th) of two cases that he treated and post-mortemed—prior to adopting the acetylcholine treatment in 1934—in which the apparent cause of death was an overgorged stomach with a consequent or causal dry "impacted" condition of the terminal portion of the small intestine. From 1934 to 1937 inclusive he treated 136 cases of colic of which 21 died; but no *post-mortem* examination showed a similar engorged stomach or "impacted" small intestine. He evidently concludes from these results that many cases among the 115 that recovered were of a similar sort to the two fatal cases that are described as occurring prior to 1934 and that some of them would have died if it had not been for the acetylcholine treatment. All veterinarians engaged in horse-practice have encountered a few cases of fatal equine colic where, on *post-mortem* examination, the stomach has been engorged, as Mr. Gunning describes, and where for some time before death no fluids seem to have passed from the stomach into the small intestine; in fact, nothing seems to have passed. Consequently one finds, *and expects to find,* a more than normally dry condition of the ingesta of the small intestine, especially at its lower end. My assumption in these cases has been that the cause of death was to be looked for, not in the consequential dryish condition of the ingesta of the small intestine, but in the greatly overloaded stomach which, as Mr. Gunning says, still contains medicines that have been given by the mouth long before.

It has seemed to me that such an immense and abnormal mass, with such apparently complete paralysis of gastro-intestinal movement of a normal sort, must prove fatal quite apart from the resultant state of the ingesta in the small intestine. In my experience these cases, or at least the fatal uncomplicated cases, are rare and it is quite possible for Mr. Gunning to make *post-mortem* examinations in the small numbers he describes for several years without finding such a condition as the cause of death. Proof that these cases, if they commonly occur, are usually easily "cured" or recover spontaneously is found in the rarity with which the condition is found as the cause of death on *post-mortem* examination.

Nevertheless, if Mr. Gunning has found a technique that will certainly in every instance obviate this cause of death, however rare it may be, he has done a notable service to veterinary science. But personally I doubt it. When one remembers the immensely overfilled stomach, weighing in one recorded instance about half a hundredweight, it taxes the credulity to imagine that a few grains of acetylcholine would enable the animal to diminish that mass and to recover. I believe that in such cases the animal has already crossed the border-line of recuperation and that death is inevitable.

We need more evidence, and it is to be hoped that the enterprise and industry of Mr. Gunning will stimulate others to produce, and to compare, their records of treatment and *post-mortem* examinations. For myself I wish the great opportunities of the past could come back to me now for the adequate and controlled testing, on a large scale, of acetylcholine. The experiments that should now be made to prove the truth of Mr. Gunning's claims ought not, in my submission, to be complicated and endangered by the simultaneous use on the same cases of such doubtful or perilous drugs as linseed oil, turpentine, and arecoline. If the interpretation placed by Mr. Gunning on his results is correct, we appear to have in acetylcholine a specific remedy for a certain type of equine colic of such remarkable power that it should not need, or may actually be hindered by, these other agents. A specific remedy as a rule must be able to stand on its own merits and the old clinical hand is entitled to regard with the suspicion of experience the "specific" that will only exert its alleged effect when it gets a lot of help from other drugs.

Yours faithfully,
Wakefield Rainey.

P.O. Box 136,
Bloemfontein, O.F.S.,
South Africa.
November 25th, 1938.

THE ADRIAN JONES STATUE APPEAL FUND

Third Appeal

To the Editor of the Veterinary Record

Sir,—We have pleasure in submitting for favour of publication in the *Veterinary Record* a further list of subscriptions which have been received towards the cost of securing in bronze the equestrian group which is the subject of the above appeal. Since the date of our last appeal (*Vet. Record*, 50, No. 23, p. 695), a further £249 13s. 6d. has been received and a list of those who have kindly subscribed is appended hereunder.

The total receipts so far to hand have now reached the sum of £1,014 11s. 6d. This gratifying response is most encouraging, not only to those of us who were responsible for launching this appeal, but also to Mrs. Adrian Jones, who shares our keen desire to see this masterpiece of her gallant husband's artistry placed in its final resting place in the quadrangle of the Royal Veterinary College at Camden Town.

There are, we feel sure, many members of the profession who would wish to subscribe and have not done so, and the object of this third appeal is to inform the profession of the present state of our fund and to add that we now require only a further £340. As soon as this amount is to hand, we shall be in a position to issue the necessary instructions for the casting to take place. This process will, we are informed, take a few months, and we are most anxious to arrange for the official unveiling to take place at the college during the coming summer months. Every subscriber will be notified of the date of the unveiling and will receive an invitation to attend. Will intending subscribers very kindly send their donations to one or other of the undersigned.

We should add that Mr. A. P. Burton, who will undertake the process of casting, has most generously offered to store the plaster cast at his factory gratis, and while we are most grateful to him, we are naturally anxious not to be a burden on his generosity.

For the information of those who may have missed our previous appeals, it may be helpful to add that a full-page photograph of the group is to be found in the *Veterinary Record* of June 19th, 1937, page 78.

We are,

Your obedient servants,

E. Brayley Reynolds,

George W. Dunkin (*Hon. Sec.*),

P. J. Simpson (*Hon. Treasurer*).

December 3rd, 1938.

Adrian Jones Statue Appeal Fund

Amounts received since publication in the "Veterinary Record" of the first List of Subscribers, June 4th, 1938:—

	£	s.	d.
Royal College of Veterinary Surgeons	105	0	0
National Veterinary Medical Association	50	0	0
Students' Union, Royal Veterinary College, London	25	0	0
Royal Counties Division	10	10	0
Eastern Counties V.M.A.	5	5	0
Messrs. G. A. Banham & Son	5	5	0
Central Veterinary Society	5	5	0
R. C. G. Hancock, Esq.	5	5	0
Major J. Bell	4	5	0
The Veterinary Research Club ...	3	0	0
Lincolnshire & District Veterinary Association (second donation) ...	2	12	6
R. C. U. Fisher, Esq.	2	2	0
Veterinary Medical Association of Ireland	2	2	0
Society of Veterinary Practitioners ...	2	2	0
Derbyshire Division of the N.V.M.A.	2	2	0
W. Woods, Esq.	2	2	0
South Eastern Veterinary Association	2	2	0
W. L. Little, Esq.	2	2	0
W. Turtill, Esq.	1	1	0
J. J. Burchnall, Esq.	1	1	0
Lieut.-Col. E. G. Turner, D.S.O. ...	1	1	0
North of England V.M.A.	1	1	0
Dr. W. R. Wooldridge	1	1	0
Miss J. Farman	1	1	0
G. M. Gates, Esq.	1	1	0
E. P. Edwards, Esq.	1	1	0
Professor J. McCunn	1	1	0
H. E. Bywater, Esq.	1	1	0
R. L. Cornell, Esq.	1	1	0
Ayrshire Division, N.V.M.A.	1	1	0
H. H. Skinner, Esq.		10	6
C. Formston, Esq.		10	6
	239	13	6
Amount previously acknowledged	764	18	0
Total of amounts received ...	£1,014	11	6

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VICTORIA VETERINARY BENEVOLENT FUND

Christmas Gifts

To the Editor of the Veterinary Record

Sir,—The Victoria Veterinary Benevolent Fund has been able for several years past to send a small present of money at Christmas to the 40-odd widows and others who are in receipt of weekly grants. This has been made possible by the generosity of your readers, who have sent donations to me for the purpose. Last year about £60 was distributed in this way, and in every case the recipients acknowledged the gift with much gratitude.

May we hope that this year we may again be enabled to be the almoners of the profession so as to bring some little extra comforts and a little extra happiness into these poor homes at Christmastide.

Donations sent to me, however small, will be thankfully received. Donations received up to December 20th will be distributed in time for Christmas.

Yours faithfully,

Fred Bullock, *Secretary*.

10, Red Lion Square,
London, W.C.1.
December 2nd, 1938.